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School of Science and Technology
Department of Industrial Engineering and Technology
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REGULATORY INTERACTION IN ELECTRICITY RETAIL; THEORY AND EVIDENCE FROM THE UNITED STATES AND THE EUROPEAN UNION

Timo Partanen

Aalto-yliopisto
Teknillinen korkeakoulu
Aalto-universitetet
Tekniska högskolan
Aalto University
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Timo Partanen

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Aalto University
School of Science and Technology
Department of Industrial Engineering and Management
P.O. Box 15500
FI-00076 AALTO
FINLAND

Tel. +358-(0)9-4702 2846
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Abstract

In this research I have used a sample that was to cover market - regulatory environment - firm performance permutations capturing the changes in competitive dynamics and the co-evolutionary paths the firms and their respective business environment have taken when the markets were opened for competition. The research process builds on Event Structure Analysis (ESA) as a means to create causal patterns in the interaction between the firm and the environment. Data was collected from primary and secondary sources and complemented by confirmatory interviews.

The electricity markets prior to opening for competition were either vertically integrated geographically monopoly markets or monopoly markets where the entry was constrained by other means. The value chain from generation to retail sales was rigid. There was either a position in which one company was in charge of the entire value chain, or the wholesale oligopolies had exclusivity on the sales to local monopoly distribution / retail firms. In most researched jurisdictions an oversupply of power prevailed at the time of the introduction of competition, which subsequently led to price cuts for some customers.

During the process the focal point of activities shifted from being between the firm and the regulator / legislator to being between the firm and the customer. There was difference between the cases, but the fundamental shift seemed to follow the same basic pattern. The process ended in the key interaction taking place between the firm and the customer, with the regulator and legislator influence still being active. The regulative framework was not really designed for competitive markets but the existing structure had to be used to support another modification of the system.

Key contribution of this research consists of the cyclical co-evolutionary interaction model that captures the interactions between the energy firm and its regulatory, legislative, customer and external interactions to a cohesive whole. The model is complemented by a set of propositions that define the key elements of this interaction. The model builds on the foundation laid by political economy, the theory of public choice and the Austrian economics.

Keywords Electricity retail, Co-evolution, Political economy, regulatory interaction

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Tiivistelmä

Valitsin tutkimusasetelman, joka kuvastaa muutoksia energiayritysten toimintaympäristössä silloin, kun markkinat avataan kilpailulle sekä Yhdysvalloissa, että Euroopassa. Tutkimusotokseni on tarkoitus kattaa kaikki mielekkäät markkina - regulatoorinen ympäristö – yrityksen menestys –yhdistelmät, kuitenkin fokusoiden vähittäismyyntiyrityksiin näin sisäistäen muutokset kilpailuympäristössä ja yritysten ja niiden toimintaympäristöjen ko-evolutionaarisissa kehityskuluissa.

Tutkimusprosessi rakentuu Event Structure Analysis (ESA) -mallille tavoitteena rakentaa kausaalisia kehitysmalleja vuorovaikutuksesta yrityksen ja sen ympäristön välillä. Data kerättiin sekä primäärisistä, että sekundäärisistä lähteistä ja sitä täydennettiin konfirmatiivisillä haastatteluilla. Ennen kilpailulle avaamista sähkömarkkinat olivat joko vertikaalisesti integroituneita monopolimarkkinoita tai monopolimarkkinoita, joissa markkinoille pääsy oli rajoitettu muutoin. Arvoketju tuotannosta jakeluun oli kiinteä. Ketju kostui joko yhdestä yhtiöstä, joka vastasi kaikista toiminnoista tuotannosta jakeluun, tai tukkumarkkinoiden oligopoleilla oli yksinoikeus myyntiin vähittäismyynti- ja jakeluyrityksille. Useimmissa tutkituissa tapauksissa sähkön ylitarjonta vallitsi markkinoiden avautuessa kilpailulle, mikä vastaavasti johti hintojen laskuun osalle asiakkaista.

Prosessin aikana toimintojen fokus siirtyi yrityksen ja regulaattorin välisestä toiminnasta regulaattorin / lainsäätäjän ja asiakkaan väliseksi. Tapauksien välillä oli eroja, mutta tämä siirros tuntui olevan yhteistä kaikille tutkituille tapauksille. Prosessi päätyi korostamaan vuorovaikutusta yrityksen ja asiakkaan kesken lainlaatijan ollessa niin ikään edelleen aktiivinen. Regulatoorista ympäristöä ei oltu alunperin suunniteltu toimimaan kilpailluilla markkinoilla, mutta muutakaan ei ollut olemassa, joten sen käyttö muutosten perustana oli luonnollista.

Tutkimuksen pääkontribuutio on syklisen vuorovaikutuksen malli, joka esittää energiayrityksen vuorovaikutussuhteen sen regulatoorisen, lainsäädännöllisen, liiketoiminta- ja ulkoisen toimintaympäristön kanssa. Mallia täydentävät propositiot, jotka kuvaavat toiminnan luonteen dynaamisuutta. Malli rakentuu poliittisen taloustieteen, ulkoisen valinnan teorian ja itävaltalaisen taloustieteen luomalle perustalle.

Asiasanat Sähkön vähittäismarkkinat, Ko-evoluutio, Poliittinen taloustiede, regulatorinen vuorovaikutus

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Late 2003 when I was seriously considering the idea of starting my journey towards a dissertation I fortunately had very little understanding on what was laying ahead. After a long career in the energy industry and in management consulting the required changes in thinking, writing and in general the way how I conceptualize the world around would be really substantial. Subsequently putting these changes into reality has sometimes been painful and the thought of aborting the journey has often been really tempting.

The original idea of doctoral studies was implanted into my mind during my MBA studies by prof. Kaila. This idea was subsequently reinforced and deepened by prof. Tikkanen. Ultimately after really getting on the course my supervisor, prof. Lamberg and Kalle Pajunen, from UTA to whom I am really grateful for the endless patience have managed to keep then pace of my work. Professor Kauranen from TKK, and professors Ronkainen, Grant and Mayo from Georgetown University have all provided me valuable support and guidance in my lonely travel.

In the beginning of the research process I was not only mentally, but as well physically detached from the academic environment that is so important in developing the academic way of thinking. Living in the US, communicating with prof. Lamberg primarily via e-mail and preparing the research at home without any direct daily contact with the academic world was not the most efficient way to prepare the work.

However, staying in the US forced me to find my own ways of obtaining information. The largest library in the world, the Library of Congress turned out to be a tremendous source of information. Similarly the American way of using personal contacts for opening doors that otherwise would stay closed helped me significantly. With the help of Ambassador and Mrs. Jukka Valtasaari I got to know the former chairman of API, Charles DiBona, who in turn helped to open the doors to the boardrooms of the US energy industry for me. Obviously without them the work would not have been possible. Likewise the financial help from Fortum Foundation and Dr. Jan-Erik Österholm has been essential.

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My both sons have contributed to completion of this work. Hannu has done the indexation for the manuscript and Tommi has provided the cover photo. I would like to thank them both for this support. Finally, without the daily support and assistance of my wife, Helena I could not ever have reached this end. She is tremendously good in finding my typos and getting my text in line with what it should be.

Espoo, October 17th, 2010

Timo Partanen

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1 INTRODUCTION

1.1 BACKGROUND

In the late 19th century the electric utility industry began its emergence on both sides of the Atlantic. During its embryonic phase the industry, consisting of generation, integrated distribution / retail, and in some cases even consumption, was under the umbrella of one vertically integrated local monopoly firm. The initial model had similar characteristics all over the world. This is due to the lack of an infrastructure with an established legacy to support the new industry, combined with the substantial risks involved with investments in the build-up and early expansion of electricity generation, transmission and distribution. There was probably never a formal decision to use a monopoly as the organizational form – this emerged naturally from the technical foundations of the new industry. Besides the entrepreneurs in the industry, during this era nobody really could have predicted what the overall role of this new energy infrastructure would be. Nobody could have known for certain that electricity would grow to have the significant role we recognize today in terms of serving the infrastructure development of society (Demurger, 2002; Röller and Waverman, 2001; Calderon and Serven, 2004).

As the electric utility industry grew and gained a more established position in society, the increasing number of firms engaged in energy business inevitably led to interaction between the firms in the industry, and subsequently to competition. This in turn resulted in the restructuring of the industry through a wave of mergers between the firms (Behling, 1938). A natural consequence of the growth of the firms was an increase of the power of the firms vis-à-vis the customer, and more generally in society. In the United States (US) the government began efforts to restrict the growing power of the monopolies by introducing antitrust legislation in the 1910s and 1920s (Chandler, 1990). This action was, among others directed towards the electricity utility industry as the overall significance of this new energy delivery infrastructure industry in the US began to unfold.

It is especially in the Nordic area that the government's role has been significant as an owner of enterprises in general, the governments have often also had direct authority over energy firms.

Obviously the situation in all European countries has not been identical. In some countries private enterprises have had a leading role in the energy industry, while in others government-owned and private enterprises have coexisted. In Europe the question of the market power of energy firms permanently emerged on the public agenda in conjunction with the privatization of the energy industry in the 1990s, which was sometimes followed by unbundling the firms into wires and sales businesses. In the UK, the administration of Prime Minister Thatcher began introducing competition and privatization in the energy market, which later spread to other countries in Europe.

The relatively static state both in the US and Europe was perhaps permanently changed by the introduction of competition towards the end of the 1990s. The process was started on a major scale in Europe through the introduction of common market principles by the European union (EU). This has taken place in three phases[1], the third of which at this time is still pending. In the US the idea of opening up the markets for competition was a wave that extended through the country in the late 1990s.

The rationale for this dissertation is in the need to understand the behavior of energy firms in the US and Europe as a reaction to the changes in their regulatory environments when the markets in which they were operating were opened for competition. The variances in the ways the firms appeared to react further emphasized the complexity of the issue. Although there seemed to be a multiplicity of paths the different jurisdictions took, sometimes they appeared to come to a standstill, but somehow later regained momentum. In the huge machinery consisting of the legislative – regulatory environment, and the firms with their customers, every component seemed to somehow be dependent on multi level interactions in an interconnected network of influences. The features of interaction between the industry, the regulatory environment and the legislative framework under various jurisdictions appeared to be different, but yet somehow emitted signals as if it would be following a similar grand scheme. In some markets the firms and their regulatory environments had been evolving in close interaction, while in other markets the relationship could even have been regarded as hostile. The characteristics of competition changed when the markets were opened for competition. This often resulted in a wave of mergers between the companies – some companies flourished while some others vanished. All this seemed to depend on a complex combination of circumstantial characteristics.

[1] Directive 96/92/EC of the European Parliament and of the Council dated 19 December 1996 (1stPackage) set out the framework for common rules for the internal market in electricity. This first package has subsequently been complemented by the second package (2003/54/EC) (2ndPackage). The third package (Directive 2009/72/EC) was approved by the European parliament in September 2009 and it will thus enter into force in March 2010 and has to be subsequently included in the national legislation of the member states.

In this research I concentrate on the electricity retail firms. I have restricted the scope of this research, being especially fully aware of the many similarities between the electricity and gas markets, the fact that often these two products are found in the sales portfolio of an energy company, and that the two products sometimes influence each other. I will further narrow the scope of this research to the evolutionary paths of electricity retail firms at the time of opening their respective markets for competition; analyzing the signals they obtained from the operative environment and the firms' reactions to these signals. This narrow scope, however, led to the carrying out of research in a relatively broad field, and to combining research streams from classical economics, political economy, strategy research and research of organizational behavior, and ultimately to creating a new interdisciplinary research stream.

1.2 THE STATE OF RESEARCH IN REGULATION AND POLITICAL ECONOMY

In classical economic theory the smallest indivisible building block of society is the "economic man" who always seeks his own interest. Olson (1965), however, lists other motivational causes for economic behavior that could likewise be regarded rational. This list includes, gaining prestige, friendship, social and psychological benefits, or simply, philanthropic or religious causes. Simon (1986) regards the motivation of gaining economic benefit as being *not the essential part*. In a society composed of free and rational utility-maximizing individuals, these individuals interact with each other and sometimes choose to undertake action collectively, rather than privately (Buchanan and Tullock, 1965). The obvious emerging question is when will an individual member of the group find it advantageous to enter into a "political" relationship with his fellows, and what triggers this?

Both the theory of democracy and theory of market economy are products of the Era of Enlightenment[2] (Buchanan and Tullock, 1965). The eighteenth-century philosophers do not specifically make a distinction between these two orders of human activity. The democratic state was conceived as that set of constraints appropriate to a society which managed its economic affairs largely through a competitive economic order, in which the economic interests of individuals were acknowledged to be paramount in driving men to action. Buchanan and Tullock (1965) describe the conceptualization of collective action in the eighteenth century in terms of the laying down of general rules, applicable to all individuals and groups in the social order. In

[2] The authors refer to England as discussion in other countries could have taken a different path.

the discussion of these general rules, serious and important differences in the economic interests of separate individuals and groups were not expected to occur. Differences were foreseen and the necessity for compromises was recognized. However, these were not usually interpreted in terms of differences in economic interest.

Lyon (1937) formulates the essence of private enterprises functioning under the operative framework set by the government as follows: *"The term "Private Enterprise" would mean nothing if it were not for governmental regulations establishing the right of private property and for governmental interpretation and enforcement of contracts"* (Lyon, 1937). In practice no enterprise, private, publicly held or state owned, small or big, could exist or function without an overall framework for the business. Most often, in an organized society this is achieved through government action, which in turn should represent the interests of individual members of society. The most fundamental form of regulating business transactions is to pass laws that define the overall framework and structure of the society under which firms conduct their businesses. The mere existence of laws would not suffice if there would be no body to ensure that such laws were meaningful, and that the intention of the laws would be followed. Subsequent to passing the laws the establishment of a law enforcement system is a prerequisite to achieving the expected results of the system, and to the overall proper functioning of that system. The existence of a state, governed by a government can be seen as one indication of the common intent of free and rational, utility-maximizing individual members of society (von Mises, 1928; Downs, 1957; Buchanan and Tullock, 1965). Choosing common action, rather than each member acting individually, can be seen as an indication of members understanding the potential of obtaining something more through this form of action.

In addition to classical economics and the work of Austrian economists defining the market process (von Mises, 1928, 1979, 2009; Hayek 1973; Kirzner, 1992; Foss and Christensen, 2001) there is a rich literature describing the various interactions between firm and customer (Mitzruchi and Yoo, 2002; Rao, 2002), regulator and firm (Smith, 1776; Chydenius, 1765; Kahn, 1988; Aldrich, 1979; Schumpeter, 1964; Williamson, 1975; Coase, 1988; Kirzner, 1992; Hayek, 1979; Stigler, 1988; North, 1990, 1992), and between government and voter (Downs, 1957; Buchanan and Tullock, 1965; Kessler, 2003; Downing, 2005; Degan, 2006; North, 1990). There is, however, no comprehensive combination of these illustrations that paints a picture of the interaction between all these actors during the period of deregulation of the electric utility industry. The interaction of the electricity retail firms with the respective environment and the subsequent co-evolution of both is the focus of this research.

Natural monopolies, where one service provider produces the service for an entire society, are economically effective due to the continuously downward sloping unit cost curve, or subadditivity (Demsetz, 1968; Kahn, 1988; Viscusi et al., 2000, Brätland, 2004). Examples of such natural monopolies (Demsetz, 1968; Viscusi et al., 2000) are many infrastructure industries, such as the power and gas transmission and distribution networks. Under a natural monopoly a certain degree of regulatory restriction is often kept in place in order to prevent the abuse of dominant market position, although the ideal of the market regulating itself would follow the principles of Austrian Economics (von Mises, 1928, 2009; Hayek, 1973; Kirzner, 1992; Foss and Christensen, 2001) where the individual's action has a pivotal role. The Austrian School makes use of the ideas of rest and equilibrium, without which economic thought cannot progress. However, it is always aware of the purely instrumental nature of these ideas and aims to account for prices actually paid in the market, and not just prices that might be paid under certain conditions that are never-realizable (von Mises, 2009).

Rothbard (1962) regards a monopoly, and the prices a monopoly obtain, to be part of the regular market process. In his thinking the market has free entry, which is seldom the case in real-world economic situations. Even under natural monopolies the market self-regulation is sometimes promoted as an alternative to regulation (Brätland, 2004; Rothbard, 1962). Brätland (2004) goes so far as to propose that contestability[3] theory as an explanatory framework could be used to replace the theory of natural monopolies. A remaining question is then, to what extent, how and by what means should the regulation of a natural monopoly be carried out, or should it.

When energy markets are opened for competition we could assume that the government acts in a Russeauian fashion as a device for carrying out the will of the people (Downs, 1957). This could be presented as a one directional process where the legislator initiates the process with the customer being the ultimate beneficiary. However, there are multiple additional parties involved in the process that cannot escape the impact of this process. A regulator is required to be an instrument to implement the regulations while the target of the regulations is the firm. The changes in the firm's action portfolio, caused by the initiation of the process will subsequently impact the choices available to the customer. The customer, being a member of society and thus eligible to vote, will by voting, signal whether the publicly declared benefits were ever realized.

The traditional conceptualization compresses the process into a set of momentary fragmented projections with no associated dynamism. In this research I try to show that the process of

[3] The idea in contestability is that a monopoly market is vulnerable and can be challenged from within or from without provoking that the entry and exit barriers are not substantial.

opening the markets for competition should be seen as a dynamic interaction between the legislator, regulator, firm and the customer, where the customer has a dual role of a customer to the firm in parallel with being a voter in government elections. In this proposed cyclical interaction all the actors' actions influence freedom of the others to take action. An action by a subject causes a reaction by the object, which in turn provokes further action by the involved parties. This, and the dual role of the customers, ties the process into a cycle where the influence appears as a sequence of actions, and reactions leading to interaction. By doing this, I follow Downs' (1957) idea of analyzing political theories and economics, and especially more thoroughly, the link between these two. In this research my intention has been to complement the existing body of research by merging theories that have previously been separately presented into a new dynamic theory of interaction between the firm and its regulatory and business environment. I will try to bring a new perspective into the interaction between the various subjects and see how they interact. Specifically my intention is to analyze the co-evolutionary interaction between the parties.

In order to be able to illustrate the interaction between the firm and the regulatory and business environments my intention is to bring a co-evolutionary view into the discussion of corporate political activity.

1.3 RESEARCH OBJECTIVES AND RESEARCH QUESTIONS

The first key objective of this study is to analyze and explain the changes in regulatory dynamics at the time of opening the energy markets for competition. This translates into mapping both the company actions vis-à-vis the events in the business environment of the firm, and the actions taking place in the environment of the firm that impact the firm. This is vital for understanding the logic of action the firms took at the time of opening the markets and during the following period. The second objective of this research is to analyze and identify patterns in the interaction between the selected case firms with their respective environments. This approach is encouraged by Winter (2005), who states that evolutionary theory invites detailed attention to individual firms and the problems they face in dealing with competitive environments.

In making energy markets competitive there are at least three distinct parties: the energy firms, government (collectively the regulator and the legislator) and customers. My intention with this work is to be able to provide understanding to the energy firms struggling with regulatory

changes, but also to the regulators who feel the pressure from end consumers trying to navigate the unknown waters of competitive markets.

For this research the principal questions are the following:

1) How do regulatory and industry dynamics change as a result of the opening of energy markets for competition?
2) How do the energy firms, customers, and legislator / regulator interact in a post market opening environment?
3) How have the action portfolios of energy firms changed at market opening?

1.4 RESEARCH OBJECTIVES, APPROACH, METHODS AND STRUCTURE OF THE DISSERTATION

In this research I seek to capture information on the interaction between electric utility firms and their business, and regulatory environments and customers during and immediately following the opening of the retail markets for competition. To this end, I chose as the research setting retail firms and their political and regulatory environments in markets that were opened for competition representing both the US and Europe. By selecting firms from both these groups of individual markets I tried to cover sufficiently the combinations of market - firm - performance. For the firms the change in the business environment was so fundamental that it could be characterized as a strategic surprise (Eisenhardt and Bhatia, 2002). Indeed, the interaction process after the initial steps was substantial and traceable. In most cases this process is still ongoing.

When analyzing electricity utility firms in this context the use of case methodology unfolded as a natural means of investigation. For the cases I reconstructed a sequence of events to illustrate the events and their temporal relationship. For this analysis I chose to use Event Structure Analysis (ESA) and the Ethno[4] software, which is a widely used and proven tool, proved to be a good way to provide structure to the process of analyzing the events. The use of company press releases as a source of event data turned out to have its novelty as a source of firm initiated information. The press releases, however, concentrate primarily on positive news. Thus these press releases were subsequently complemented by event information that originated from the company environment. These were complemented by confirmatory interviews with industry experts.

[4] Ethno model developed by Indiana University. http://www.indiana.edu/~socpsy/ESA/ethno.html.

When selecting a set of case firms representing a multiplicity of markets and political environments the challenge was to find markets that would be open and functioning in reality, and not only on paper. To assess the functioning of the various component markets I used external assessments: in the US the RED index[5] for comparing the markets in different states, and in Europe, the assessment prepared for the EU concerning the functioning of the markets within different member states. The number of real markets where competitiveness would even approach the Schumpeterian ideal[6] was low, and it was hard to find a large number of firms that would be active in these markets. Thus I had to be satisfied with a small N[7], however to capture a sufficient quantity of data that enabled theory construction.

Many of the firms active in retail were also active in other parts of the electricity value chain, such as generation or trading of electricity, natural gas, coal or oil. These other businesses could have been made competitive earlier, or at a pace that was different from that of the electricity markets. For the purposes of this research I narrowed the scope of the research by omitting the other products of the participating firms and concentrated on electricity sales to final consumers; i.e. electricity retail. The key focus was placed on electricity retail primarily in order to demonstrate causality and comparability, to maintain clarity, and to enable a clear "audit trail" throughout the research process. Although many of the selected case firms have an active presence in other parts of the value chain, the participation in the retail element was deemed to be the key issue.

The mechanisms for introducing competition in the electricity retail markets have been dissimilar in different markets and this has led to asymmetrical company reactions and subsequent performance differences, and thus provided a fruitful setting for this research. This research focuses on Europe (EU 15)[8] and the United States (US) as the number of different permutations obtainable from these case markets covers sufficient combinations of deregulatory arrangements and company reactions and strategy.

This research aims to contribute to the research in political economy by building a link between various research streams. I have combined the work of key researchers and thus created an integrated cyclical model of interaction between the firms, the regulators, the legislators and the

[5] The RED Index was prepared by CAEM, Center for Advancement of Energy Markets, a US think tank.
[6] Schumpeter (1964) defines fully competitive Market as one where no actor has the ability to impact the price of the product or any factor market.
[7] Small N stands for using a small number of cases as a basis for theory preparation.
[8] The justification to select only the 15 EU members as a source of utility data is covered later. The principle for this choice is, however, that the historical perspective of the most recent 12 (new) members of the EU is relatively short, and the markets only recently opened for competition.

customers. A key finding during the process is that energy firm customers also have a role as voters in government elections, thus setting the evolutionary cycle in motion. As a function of time the cycle keeps spinning towards an elevated level, and towards a common, but unknown future.

This dissertation is divided into 8 chapters. In the following, I provide a brief introduction to the main issues presented in each chapter.

Chapter 1 includes the introduction to the issue, the research field and how this dissertation ties to the existing body of research. The main concepts are defined in this chapter.

Chapter 2 includes an introduction to the research framework. It presents the key results of previous research associated with this dissertation. In the chapter I intend to provide an overview of the research in political economy.

Chapter 3 provides an introduction to the research site, i.e. the industry that is central to this research. The chapter includes a review of the key characteristics of the value chain, and the impact and mechanisms of opening the energy market for competition.

Chapter 4 presents the methodological foundation of the dissertation including the motivation and justification of why the case methodology was selected. In this chapter I present in detail the methodology used in the dissertation including the use of Ethno software.

Chapter 5 presents the cases selected for this research and provides a historical narrative and the event structure analysis for each case.

Chapter 6 presents the assessment of the dynamics in the environment after market opening.

Chapter 7 incorporates a development of a theory of competitive dynamics in market opening.

Chapter 8 concludes the dissertation by providing a discussion of the theoretical and practical contribution, the weaknesses and limitations of this research. I present some key ideas for future research and discuss the managerial implications this research could bring to energy firms, regulatory authorities and legislators active in introducing energy-related legislation.

1.5 KEY CONCEPTS

The terminology used in conjunction with bringing competition to the electricity markets can have multiple meanings in different market areas, thus sometimes making discussion of these

issues a stressful experience. For the purposes of this research, and to bring clarity, I saw the necessity to explain some of the key concepts as follows.

Competition: The effort of two or more parties acting independently to secure the business of a third party by offering the most favorable terms.[9]

Competitive dynamics: The dynamism caused by evolving competition.

Deregulation: Removing all or part of regulation (Viscusi et al., 2000). Government, or a governmental authorized body, lifting restrictive rules for competition in a particular industry or geographical area. The objectives of deregulation can be multiple and include providing an even playing field for existing and new players with the aim of protecting consumers and promoting general economic development. Deregulation can include demands for the unbundling of different functions previously belonging in one firm. It is noteworthy that this expression very seldom is used in the US.

Distribution: An activity with the purpose of arranging and maintaining the technical capability that is required to deliver electricity over a low voltage cable, wire and metering system to the end consumer. In practice this definition of distribution means that the retail customer is connected to the electricity infrastructure through a low voltage network that is used to deliver electricity to end consumers, who may be residential, commercial and small industrial consumers. The distributor invoices the end consumer for the technical capacity of delivering electricity to the customer and using this capacity to measure the amount of electricity delivered.

Dominant market position: Often the desired outcome of regulation is to prevent the abuse of a dominant position, and thus fundamentally to protect consumers (Stigler and Cohen, 1971). Especially in the case of natural monopolies, there is not, and often cannot be, a market for a certain product or service. The possible tools or rules available for the regulator can include barriers of entry, service obligation, tariff ceiling, and restrictions on the return on employed capital.

Environment: Firms emerge from the environment to organize what would otherwise be market transactions whenever their costs are less than the cost of carrying out transactions through the market (Coase, 1988). A firm as a governance structure is separated from its environment by the boundaries that are set by the capacity of the firm to provide useful organizational functions vis-à-vis the market (Williamson, 1996). In this research the term environment does not refer to the bio-ecological environment.

[9] Webster's Third New International Dictionary.

Open access: Generators' open non-discriminatory access to the network to sell their product to a buyer (Hunt, 2002).

Market liberalization: Literally means liberating the market, but also refers to making the market competitive. It is sometimes used in conjunction with lifting import restrictions or permitting foreign firms to acquire firms at a market. It is often used as a synonym to deregulation. Due to the loose use of this expression this should not be used in scientific research, and thus has been avoided in this thesis.

Monopoly: Under a monopoly there is a single seller of a products or services (Begg, Fischer & Dornbusch, 1994).

Opening market for competition: Arrangement that makes room in the end consumer markets for competitive suppliers to act. This does not necessarily mean that the market would, in practice, even remotely perfectly resemble competitive markets**. Market Opening** is synonymous and generally used in media with the same content as deregulation.

Regulation: Government or a governmental body sets restrictive rules for a firm active in a particular industry, or geographical area, or both (Kahn, 1988; Stigler, 1988; Viscusi et al., 2000). Regulation can appear in conjunction with a dominant company (Viscusi et al., 2000), a natural monopoly (Demsetz, 1968; Kahn, 1988; Viscusi et al., 2000), or otherwise in the case of important industry (Kahn 1988), and the intent is to set rules (Kahn, 1988; Viscusi et al., 2000; Stigler, 1988) for pricing, return on capital employed, or minimum requirements for service level and possibly to eliminate the firm from abusing market dominance. This, in fact, is carried out in order to replace markets (Viscusi et al., 2000), as an environment for price discovery, and setting the rules.

Regulatory changes: Any substantial change in the firms' operating environment, i.e. introduction of regulation, changes in regulation, or introduction of competition through deregulation, in a specific market or industry.

Restructuring: A term used in the US to refer to the reorganization of the activities of regional vertically integrated monopoly firms in order that the network and other businesses are unbundled from each other (Hunt, 2002). In the US this term is often used as synonym for deregulation, although in conjunction with restructuring, a price cap for retail prices has often been set with the unintended result that no competition takes place in the residential retail market.

Retail / supply: Contractual obligation and activity with the purpose of supplying electricity to the final customer by utilizing the technical capacity of the existing distribution network. In practice retail / supply means that a company concludes a contract with the end consumer of electricity, arranges or has arranged the delivery of electricity over the distribution network belonging to a distribution company, generates itself the required electricity or purchases it from the wholesale market, and concludes the transaction by invoicing the end customer for the electricity consumed.

Trading: Selling and buying wholesale quantities of electricity under the rules of an organized exchange. The membership of the exchange often asks the applicant to meet certain financial and other requirements.

Transmission: Activity with the purpose of arranging and maintaining the technical capability that is required to deliver electricity over an interconnected high voltage cable network from generating plants, to either high voltage wholesale customers or to distributors' networks.

Unbundling: Dismantling the bundle of services a utility offers to its customers. Legally this can be done by accounting, or by legally de-merging the firms. For small firms a derogation of this requirement is often granted. A term often used in Europe in the context of separating network business from other activities.

2 RESEARCH FRAMEWORK

In this chapter I provide a review of the literature associated with the framework relevant to this research. First I discuss the evolutionary literature and how this constitutes the general framework for my research. I continue by discussing the traditional presentation of the cause and effect framework in a regulatory environment, and propose a new interaction cycle to be used in place of the once-through model.

2.1 REVIEW OF THE CO-EVOLUTIONARY LITERATURE

The concept of co-evolution has been the research framework for a rich body of research in biology. As an example Ehrlich's and Raven's (1964) research on certain moth species' interaction with the flowers they pollinate that in turn provide them with nutrition. Many other similar plant-animal mutually dependent and mutually beneficial interactions can be found in research and follow the same principal pattern. Darwin in his "Origin of Species" originally proposed that a co-evolutionary 'race' had driven the directional increase in length of a plant's spur and its pollinator's tongue, thus predicting the existence of an exceptionally long-tongued moth. In this biological co-evolutionary process the species specialize in interaction with one another and these specialized interactions result in reciprocal evolutionary change.

In co-evolutionary interaction with another, the species develop characteristics that enable them to interact with the other in certain fashions. This co-evolution thus pairs these species into a mutually beneficial relationship. Besides the butterfly and its caterpillar that obtain nourishment from the plant it is pollinating (Ehrlich and Raven, 1964) multiple other examples of this mutual dependence between two species in the biological nature exist. Janzen (1980) suggested that there is a parallel to the biological definition of co-evolution by the organizational co-evolution. Hannan and Freeman (1989), too, have drawn a parallel between biological Darwinist evolutionary process and the organizational counterpart. Hannan and Freeman (1989) encourage

organizational ecologists to consciously borrow the biological model of natural selection in developing organizational evolutionary theories. Just like the biological species that are dependent on another, the firms are dependent on the operative environment they are active in. The flip side of this dependency is that the environment of the firm in turn is influenced by the actions of the firm. However, as in biological nature where the species is primarily influenced by one other species, the firm is influenced by a multitude of actors influencing the firm from the space surrounding the firm.

Under environmental turbulence caused by a combination of firms being active in the process, Tushman and Anderson (1986) found that new firms initiated competence-destroying discontinuities, which resulted in increased environmental turbulence. The firms with a history within the industry, however, initiated competence-enhancing discontinuities resulting in decrease in environmental turbulence. The cooperation between the players tends to become more difficult with increased number of actors (Axelrod, 1984 and 1988). According to the "history friendly industry evolution model" (Malerba, Nelson, Orsiegno and Winter, 1999), firms may find it difficult to adopt to the changes in the environment as the competencies accumulated into the firm may not be easily transferred to serve new applications. The organizational routines as an organizational memory (Nelson and Winter, 1982) may thus hinder the firm from adapting to the new environment. The firms may also find it hard to adapt to new technical challenges or diversify to new markets. Such firms may stick to their history without recognizing the impact of the changes in the environment to their business base. This could be especially true for businesses that have enjoyed static environments for a long time - like the utility industry. Stinchcombe (1965) introduced the notion of the liability of newness, meaning that newer organizations are more likely to vanish. Similarly, depending on the pace and rate of changes, in some businesses long history could as well be a liability (Aldrich 1979, Kelly and Amburgey 1991).

The sequence of reactions of the individual firm in a cluster of firms to the changes in the environment will almost certainly not be identical to other firms in the cluster, but will reflect the history and resources of the firm (Tushman and Anderson, 1986; Hannan and Freeman, 1984; Nelson and Winter, 1982; Alchian and Demsetz, 1972), the characteristics of management (Chandler (1962), Alchian and Demsetz (1972)) and the competitive and regulatory situation the firm is facing. In the changed environment the institutional bandwagon pressures of non-adopters fearing appearing different from many adopters (Abrahamson and Rosenkopf, 1993) could constitute a pressure for the firms to copy the behavior of others. Schumpeter (1947) identified

two possible reactions for a firm to environmental variation and called these creative innovation and adaptive change. In the Schumpeterian definition the innovative response goes beyond existing procedures and practices while the changes induced by the latter are much less fundamental. March (1991), however, proposed the concepts of exploration and exploitation as possible reaction and emphasized the exploration of new possibilities vis-à-vis the exploitation of old certainties in organizational learning. According to Williamson (1996) adaptation is in the central role of an economic organization. The firm may react to the environmental changes either autonomously or by cooperating with the environment. Hull (1989), likewise puts environmental co-operative interaction in the central role, and found that firm may copy the patterns from the environment intact, or interact with its environment as a cohesive whole and develop own internal reproduction of the situation internally. Thus due to the bandwagon pressures (Abrahamson and Rosenkopf, 1993), the firm interacts with its environment as a cohesive whole (Hull, 1989) trying to adapt to the changed situation (Williamson, 1996) through either adaptive change (Schumpeter, 1947) i.e. exploiting the old certainties (March, 1991) or through creative innovation (Schumpeter, 1947), i.e. exploring new possibilities March (1991).

Hannan and Freeman (1984), see the high levels of structural inertia reflected in the behavioral patterns of the organization as a consequence of a selection process rather than as a precondition for selection. This structural inertia, i.e. the strength of inertial forces within the firm may vary with age, size, and complexity of the firm. By changing the key features of the organization to promote survival exposes the organization to a short-run increased risk of organizational failure (Hannan and Freeman, 1984). Hannan and Freeman (1984), thus, claim that the organizational memory (Nelson and Winter, 1982) could constitute a disadvantage for the firm if the firm has developed too strong an organizational memory. This combined with the concept of liability of newness by Stinchcombe, (1965), could push the conclusion that the age on any level could constitute an obstacle for the firm. Kelly and Amburgey (1991) claim that organizational size is associated negatively with the probability of change that involves business-level generalism. Thus, larger corporations, like many of the energy companies, are not tempted to change their general strategy based on individual changes in the business environment (Kelly and Amburgey, 1991), but they tend not to let environment easily change the course of the business.

Under market deregulation (Larsen and Bunn, 1999) even the regulatory institutions have little understanding of how they operate in the short run and evolve in the future as there are no historical evolutionary models to follow. The firm's absorptive capacity can be regarded as largely a function of the firm's level of prior related knowledge (Cohen and Levinthal, 1990). For

strategy formation the only available option is to use only the available information while maintaining the option for corrective action in the future. Stuart (1996) emphasizes the role of the firm's R&D orientation as depending on the R&D of its competitors. Technology evolves through periods of incremental change punctuated by technological breakthroughs that either enhance or destroy the competence of firms in an industry (Tushman and Anderson, 1986). It is important for the firms to maintain active R&D activity and follow carefully the activities taking place in the industry. Whether it be the technology or any other aspect of change in the environment of the firm that keeps changing, the firm needs to take action. Dosi (1992) relates continuous changes to progress along a technological trajectory defined by a technological paradigm, while discontinuities may be associated with the emergence of a new paradigm. As the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities (Cohen and Levinthal 1990, Mahoney, 2000), successful firms often rely on a variety of low-cost probes into the future, including experimental products, futurists, and strategic alliances (Brown and Eisenhardt, 1997).

Teece (1986) demonstrates that markets do not work well when imitation is easy, and the profits from innovation accrue to the owners' complementary assets, rather than to the developers of the intellectual property. Thus the innovating firm would need to have established a position in these complementary assets as an insurance policy prior to setting sail towards the sea of innovation. Innovators with new products and processes providing value to consumers may sometimes be so ill positioned in the market that they necessarily will fail (Teece, 1986). Under such circumstances the competence-destroying discontinuities (Tushman and Anderson, 1986) causing environmental turbulence may thus cause dramatic impact. Innovating firms without the required manufacturing and related capacities may perish even though they are the best at innovation.

Institutional isolating mechanisms may provide a firm with either industry leadership or obsolescence, depending on whether firm practices generate and sustain strategic isolating mechanisms in their competitive context (Jones, 2001). To enhance their development, rival firms not only search for new capabilities within their organization, but also for those that rest in their competitive environment (Huygens, Van Den Bosch, Volberda and Baden-Fuller, 2001). These search processes at both firm and industry levels in interaction makes industries and firms co-evolve over time (Murmann, 2003).

The capability differences between the firms are a necessary condition for vertical specialization; and the transaction cost reductions only lead to specialization when capabilities along the value

chain are heterogeneous (Jacobides and Winter, 2005). Jacobides and Winter (2005) suggest that there are four evolutionary mechanisms that shape vertical scope over time: the selection process itself, driven by capability differences dynamically shaping the vertical scope; the transaction costs that are endogenously changed by firms that try to re-shape the transactional environment to increase their profit and market share; the changes in vertical scope affecting the nature of the capability development process, i.e., the way in which firms improve their operations over time; and the changes in the capability development process re-shape the capability pool in the industry, changing the roster of qualified participants.

Although the essence of organizational capability is the integration of individuals' specialized knowledge (Grant, 1996), the flexibility of the firm can be seen to derive from the repertoire of managerial capabilities (management challenge) and the responsiveness of the organization that Volberda (1996) calls organization design challenge. On the basis of theories of control, Volberda (1996) argues that organizational flexibility is inherently paradoxical and requires a constructive friction between change and preservation. The paradox of flexibility is portrayed in a conceptual model that relates competitive environments, certain types of flexibility, and organizational conditions.

Järvinen and Sillanpää (forthcoming) have mapped the structure and evolution of evolutionary research related to the fields of management, economics and sociology. Their bibliometric analysis shows that the articles by Cyert and March (1963), Nelson and Winter (1982), Hannan and Freeman (1984), Tushman and Anderson (1986), and Hannan and Freeman (1989), are the most cited articles in the field of evolutionary research. Of those articles that made it on the list, that by Nelson and Winter (1982) is clearly the most cited and could thus be regarded as a cornerstone for research in evolutionary research and has impacted practically all evolutionary research that has been published subsequently.

Each organization interprets the signals from its environment by using modes determined both by management's beliefs about the environment and organizational intrusiveness (Daft and Weick, 1984). Regarding geographical diversification, Fuentelsaz, Gomez and Polo (2002) show that organizational size, organizational competence, and organizational experience are the key factors explaining the reactive patterns. The paths or trajectories leading to organizational flexibility vary significantly across countries, reflecting historical legacies and institutional constraints. Djelic and Ainamo (1999) argue that the process of change has been one of co-evolution, where environmental transformation and organizational change have fed upon each other through time. In a path-dependent manner, different models of organization and national

competitiveness have thus emerged (Djelic and Ainamo, 1999). Pioneer firms originally devised organizational solutions within the bounds set by nationally defined constraints and opportunities. The strategies, organization forms and the relationship between the headquarters and the affiliate company, however, could be influenced by the national heritage of the firm (Calori et al. 1997). Becoming institutionalized, the early organizational solutions in turn shaped the environment for individual organizations and organizational populations, creating new sets of opportunities and constraints. In a path-dependent manner (Kole and Lehn, 1997), different models of organization and national competitiveness thus emerged.

At the time of change, one may ask what causes the change to happen and who controls the pace and direction of change. Chandler (1962) emphasizes the general role of top and middle management as subjects in the process (Grant, 1996), although the skills and accumulated experience of the management could as well be highlighted (Alchian and Demsetz, 1972). The personal role of top management in changing the path of the firm and establishing a co-evolutionary lock-in has been described by Burgelman (2002), while Cyert and March (1963) emphasize the well-defined sequence of the decisions of the firm. Volberda and Lewin (2003), however, express their doubts regarding the active steering role of firm management in the midst of the change. One could obviously stress the element of chance in the change, i.e. the fact that the management of the firm never can fully control the chain of sequences in the environment of the firm. The firm may try to absorb information of the events in the environment of that firm, but how these events are interpreted and which decisions follow subsequently will be a function of a multitude of factors.

The research stream of dynamic capabilities focuses on the capacity of the firm to constantly and dynamically change itself based on the signals from the environment of the firm (Eisenhardt and Martin (2000), Helfat and Petaraf (2003), Petaraf (1993) and Teece at al (1997)) by introducing dynamic processes to adapt to the changes in the firm environment. The firm would need to define and acquire the most beneficial configuration of dynamic capabilities during the environmental variation and posses and then subsequently nurture these after the variation. Two specific organizational determinants of absorptive capacity, organization forms and combinative capabilities influence the level of absorptive capacity (Van den Bosch, Volberda and de Boer, 1999). Van den Bosch, Volberda and de Boer (1999) claim that this framework explains how knowledge environments co-evolve with the emergence of organization forms and combinative capabilities that are suitable for absorbing knowledge. According to Levinthal and Myatt (2006) the interaction mechanisms between the firm and the environment could take the form of simple

positive feedback from the market, subsequently leading the firm to focus on a particular capability trajectory.

In the biological examples presented above, the co-evolutionary interaction results in formation of a perfect match, where two species benefit from each other in a mutually interdependent relationship. This co-evolution in the firm world, however, does not reach an end where the development would stop. The individual firms but as well populations of firms are constantly evolving and incorporating multiple aspects in an ever increasing pace. Through the globalization and the introduction of new technologies the competition in the industry is continuously finding new forms and shapes that in turn ask for reaction by the other actors.

The firm needs to specify the most important selection process among host of processes that transform a population (Murmann, 2003). The firm will sometimes find it hard to adapt to the changes in the environment as the competencies accumulated into the firm may not be easily transferred to serve new applications (Hannan and Freeman, 1984, Nelson and Winter, 1982). Here we revert to the "creative destruction" outlined by Schumpeter, as the means of the firm to reinvent itself. Murmann (2003) captured these aspects in his co-evolutionary theory by stating that the firms, technologies and institutions co-evolve in interaction thus impacting each others' evolution. Murmann (2003) sees two distinct ways to study the evolution of firms; a model that only emphasizes the births and deaths of firms, analyzed primarily by the organizational ecologists, and the pattern utilized primarily by the strategic management research, emphasizing the capacity of the management to actively change the destiny of the firm (Chandler, 1962, Alchian and Demsetz, 1972).

Under a static environment, organizations will be positively selected by age, meaning that static environments favor older organizations in form of learning and the experience gained and accumulated by old organizations (Aldrich, 1979). Subsequently, the probability of change in strategic orientation will decrease with organizational age (Kelly and Amburgey, 1991). Old organizations in the energy industry, following Aldrich (1979) and Kelly and Amburgey (1991) could find it more difficult to react to changes taking place in the environment. Strong internal retention mechanisms make it more difficult to response to environmental changes, especially if there are few established procedures, i.e. dynamic capabilities for responding to change. However, the organizations can be expected to survive to the extent they are effective, where this effectiveness derives from the management of demands, particularly the demands of interest groups upon which the organizations depend for resources and support (Pfeffer and Salancik, 2003).

Aldrich and Zimmer (1986) identify entrepreneurship as embedded in networks of continuing social relations, facilitated or constrained by linkages between aspiring entrepreneurs, resources, and opportunities; and influenced by the interaction of chance, necessity, and purpose in all social action. A common response for organizations faced with increasing environmental turbulence has been to move towards greater flexibility or modularity and to experiment with network forms (Djelic and Ainamo, 1999). Rosenkopf and Tushman (1998) have found that the forms of co-evolution depend on the degree of uncertainty and subsequently impact the choice of modes of network evolution. Even in a strategic alliance the role of co-evolution can be seen in how the alliance co-evolves with the firm's strategy, the institutional, organizational and competitive environment, and with the management intent on the alliance (Koza and Lewin, 1998).

Nelson, 1994; Lewin, Long and Carroll, 1999 suggest that the firm level strategic and organization adaptations co-evolve with changes in the environment (competitive dynamics, technological, and institutional) and organization population and forms, and that new organizational forms can mutate and emerge from the existing population of organizations. Murmann (2003) sees two evolving populations as coevolving when both have a significant causal impact on each other's ability to persist.

In the environmental interaction the line of causation runs from the institutional environment to the firm, but likewise the firms have the capacity to shape and build the environment through purposeful actions (Murman, 2003). This interplay may take the form of using collective organizations to mobilize support, to work directly with the parliament and creating private/ public (academic) partnerships (Murman, 2003). Murman (2003) has identified a cyclical relationship at the turn of the 20th century between the UK dye industry in decline, and the universities that were not producing enough graduates for the industry. This vicious circle was leading to a stall in the R&D field, leading subsequently to the industry further falling behind the competition. This argument of cyclical relationship is further confirmed by a reverse case in US, where academia fed the ever growing hunger of the industry for talented R&D personnel. Thus the development in the firm institutional environment highly contributed to the development of the firm. The firms do not develop the capabilities they use for the business themselves, but they use the national environment to draw on the raw capabilities. Murman (2003) describes the interaction between industries and the universities in co-evolutionary terms, like in the biological sciences. He sees the interaction between the two so that both influence each other and form a relationship of cross-fertilization between the two. They likewise interact with the other

institutions, government included, to shape the operative environment more favorable. The government could have a role in distributing information, i.e. providing access to the losers in the society of their perceived sources of misfortune (North, 1990). Hannan and Freeman (1989), however, see the danger in elevated firm political activity in promoting political protection, i.e. creating protectionist entry barriers as this could jeopardize the mere existence of the national industry.

Lewin and Volberda (1999) ask for a richer arsenal of methods and techniques to be used in the research when describing the challenge of co-evolutionary research in the use of longitudinal data. They propose specifically that sequence analysis be used to complement co-evolutionary research. Research in dynamic phenomena involving firm microevolution, industry macroevolution, environmental and technological evolution and co-evolution processes within a system, would be needed. Co-evolutionary research would have the capability to bridge and reintegrate strategy and organization theory within a holistic framework

I would like to conclude this chapter by quoting John Donne's (1572-1631) famous Meditation XVII, where he stated that "No man is an island, entire of itself, every man is a piece of the continent, a part of the main". Although the poem emphasizes the interconnectedness of mankind while reminding mankind of its mortality, the pattern likewise applies to the interconnectedness of the firms and their environments.

2.2 INTERACTION BETWEEN THE ACTORS IN THE REGULATORY PROCESS

According to social contract theory, a just society is characterized by as the product of a "fair" agreement among rational individuals on the "rule of the market game" (Cordes and Schubert, 2007). Often, however, in the political discourse, the long-term benefits for society as a whole are not clearly defined. However, there is a rich array of literature in the field of political economy, addressing the issue of, what is public good, and whether such a concept exists in the first place (Buchanan and Tullock, 1965; Downs, 1957; Olson, 1965). The key objective of a political process appears to be the process itself and the opportunities to make the process and outcomes thereof look favorable before the next elections (Buchanan and Tullock, 1965; Downs, 1957). One dimension of public good that the government often provides is the protection of the members of society against non-members. Holcombe (2008) argues that the rationale for this

materializes in the act of protecting members of society and thus the government protecting its tax base. By paying taxes members of society enable the protection of their assets.

Changing the characteristics of the regulatory environment is clearly part of that category of governmental actions which is intended to create public good; otherwise the process would never obtain sufficient support among the politicians aspiring to get elected in forthcoming elections. The regulatory process faced by the energy utility industry is often seen as a one-sided process which could be characterized as a "one-way-street". The industry often presents itself as an object, while the regulatory and legislative authorities are presented as subjects in the process. There are variations between Europe and the US regarding the way the process is described in the public discourse, but the fundamental undercurrent remains the same. In this public image the regulatory process is initiated by undefined political ambitions, which are subsequently converted into objectives and methods through the political machinery and ultimately translated into arbitrary regulatory objectives and handed over to the regulator for practical implementation. According to this public image, the firms as objects in the regulatory process, have no influence in the heading or speed of the process and are merely targets or instruments for arbitrary political scoring. The view of the process, though not explicitly described as unilateral and irreversible is reflected in the work by many scholars in economics and sociology (Aldrich, 1979; Rumelt, 1984; Kahn, 1988; Viscusi et al., 2000; Sappington and Stiglitz, 1987). Although the customers are expected to be the ultimate beneficiaries of the process, and their interests appear at the end of the line, the authors do not specifically emphasize the customer benefits. Neither do they necessarily point out the interaction during the process.

The process of introducing competition, or any other major regulatory change, into a former monopoly market place is often very slow, and thus for the legislator the prospects of gaining political points sometime in the distant future do not yield benefits today (Downs, 1957). This one directional, unilateral, irreversible process, as reflected in the public discourse and by many scholars, is shown below in Figure 2-1. In this representation the process has one clear event-sequence; it begins at the legislator, flows through the regulator towards the firm and ends at the customer.

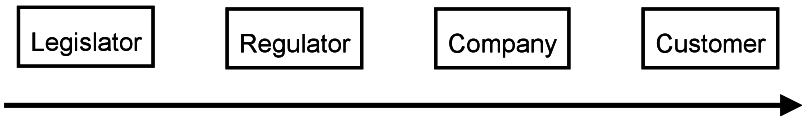

Figure 2-1 The traditional view of the regulatory process.

In this research, encouraged by the pattern proposed by Murman (2003) I suggest an alternative, cyclical view of the regulatory process (see Figure 2-2). In this model there is no beginning or an end in the cycle and the initiator cannot always be clearly identified. Once this cycle is set in motion it is spinning continuously and the speed and intensity of interaction differs over time and between different markets. The initial momentum that sets the cycle in motion could come at any phase of the cycle. It could be the legislator or the regulator being influenced by development within other industries, or other geographical markets. It could also be the firm, setting in motion a process that it will initially deem as destructive, but similarly trying to leapfrog the competition and obtain competitive benefits within the industry facing a certain change. Even customers, customer groupings or associations (Olson, 1965), customer's pressure groups or other consumer advocates could set the cycle in motion with the intention of being able to share the proceeds of increased competition among their constituents. This interaction is called the primary impact.

By adding one further dimension to the process, i.e. time, could convert the cycle into a time spatial spiral where time, on vertical axis, would be the force functioning like the rotor of a helicopter, lifting the cycle from the two dimensional surface thereby creating an entirely new motion to the spinning of the cycle. Figure 2-2 presents the basic conceptual framework for this research.

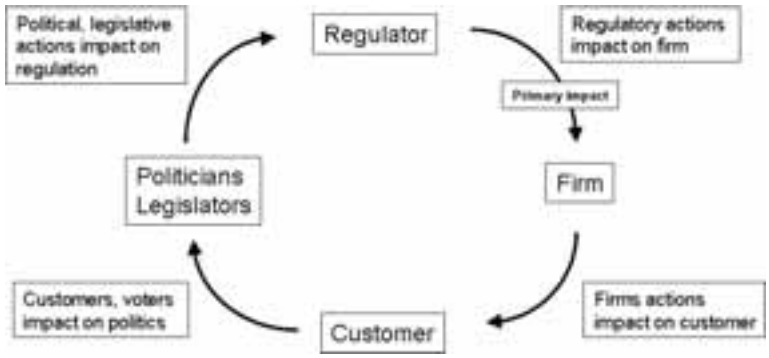

Figure 2-2 Cyclical sequential model of regulatory impact.

In the cyclical form, four distinctive components of interaction can be identified that, in concert, constitute the model.

1) Interaction between the Legislator and the Regulator,
2) Interaction between the Regulator and the Firm,
3) Interaction between the Firm and the Customer,
4) Interaction between the Customer and the Legislator.

Each of these four interaction mechanisms is discussed in detail below.

2.3 INTERACTION BETWEEN THE LEGISLATOR AND THE REGULATOR

The legislator and the regulator represent the juridical part in the interaction cycle. Sometimes they are bundled together (Downs, 1957; Buchanan and Tullock, 1965) and addressed collectively as the government. A clear distinction between the roles of the legislator and the regulator, however, can be identified, because the powers of the regulator are based on legislation passed by the legislator. The regulator is thus set up in order to implement the legislation that the legislator passes by issuing orders and rulings and determining the practicalities of implementation. However, depending on the administrative practice, the legislator could set budgetary restrictions for the regulator, which in practice could impair the

independence of the regulator. The third package of European energy market unification addresses this issue and promotes the full autonomy of the regulator.

The legislator, a democratically elected body representing the interests of the people, intends to sponsor the perceived common good and thus passes legislation to promote this objective. If the "public interest" or "common good" can be defined in the sense of Buchanan and Tullock (1965), and if individuals choose to act so as to promote this "common good" rather than their own interests, the delegation of all effective power to a single decision-maker, and an accompanying hierarchy, may appear perfectly rational. This may seem to be assured by constitutional requirements for periodic elections of rulers or ruling groups. Obviously in any society not all members' interests are aligned or perfectly symmetrical. Thus obtaining "common good" does not necessarily yield a symmetrical benefit stream to all members of society. Collective action in the sense of Buchanan and Tullock (1965) is the action of individuals when they choose to accomplish purposes collectively rather than individually. Thus the government is seen as nothing more than a set of processes, the machine, which allows such collective action to take place. Buchanan and Tullock (1965) reject the idea that the state would exist as an "überindividuell entity" that would have interests superior to the sum of its members' interests. Benn (1953) regards the strengthening of the state machine as a weakening of the individual, but every improvement in the individual means a strengthening of the nation. The motivation in government decision-making is to maximize its chances of winning the next elections (Downs, 1957). Distributing benefits to a group of voters in order to ensure winning forthcoming elections could reflect this type of action. Rothbard (1962) sees voting for a politician or a public policy as completely different matters. The electors are often tempted to vote for those politicians that manage to sell their ideas and not necessarily those that would have proven successful.

Depending on the voting rights included in the constitutional order of the state the majority vote is often the means to make decisions that subsequently bind every member of a society. Sometimes this is achieved through direct vote or referendum, but most often the members elect a legislator through elections. The individual members of the state elect their representatives to use the power that naturally resides among individuals. However, the power of the voter while in the voting booth is miniscule when compared to the power of the elected official making decisions affecting the voter during the term of office (Rothbard, 1962). Downs (1957) sees the government as a particular and unique social agent having a specialized function in the division of labor. Downs (1957) further states that the government provides the framework of order upon which the rest of the society is built. In an organized society certain rules allow certain members

of the group to use the structure of society to obtain differential advantage. It is the state that may be used for such purposes, thus prompting rational individuals to place constitutional restrictions on the use of the political process (Buchanan and Tullock, 1965).

If one aspect of the common good could be understood to be enhanced efficiency in society, this could partially be promoted by introducing competition to the energy markets. The legislation to introduce competition would then be passed by the legislator. At the same time the legislator would often establish a regulator to monitor the functioning of the energy markets, to give the regulator executive powers to regulate the market action of the actors on a day-to-day basis, and to expect reporting to the legislator of the advancement of the energy markets. Thus the regulator would be the body to ensure that the objectives of the competitive energy markets are met.

Though the roles of the legislator and the regulator can be characterized as representing two different branches of government, i.e. the legislative and the executive, the bundling of these two branches together could likewise be justified.

The parallel between biological Darwinist and organizational evolutionary process (Hannan and Freeman, 1989) is clearly visible here as the changes initiated by the government could be allegorically compared to such changes in the biological environment of species that favor new characteristics and even new species. The regulator as a newly established function has to discover its new place in the ecological framework between the firm and the legislator.

Based on the above literature review, I formulate the following Assumption.

Assumption 1a

As a result of the introduction of competition to former monopoly markets, and the regulator assuming part of the direct regulatory role of the legislator, the government could be distanced from the direct control of firms' activities and the opportunities to redirect the benefit streams to the constituents could thus be reduced.

Assumption 1b

As a result of the introduction of competition to former monopoly markets, and by the establishment of the specialized regulator, the level of expertise and detail in the regulatory framework could be expected to increase.

2.4 INTERACTION BETWEEN THE REGULATOR AND THE FIRM

In a perfectly competitive market (Schumpeter, 1964), the market itself can be regarded as the device that assures good performance. In the classical economic view, the market is competitive and the products symmetrical, no single actor is able to charge more for products or services, and their price equals the marginal cost of making that product or service available. In case competition could truly work, the value of any transaction or product could be set on a level that is defendable in the long term. This would subsequently lead into optimal resource allocation in a society, as predicted by Smith (1776) and Chydenius (1765). Under regulation the government would have an enormous task in reaching this objective by legislating for good performance. Often, in real markets the regulator is more concerned with regulating the individual actions of firms rather than concentrating on nurturing the foundation of true competition. The Austrian economists view of the market process as a systematic process of mutual discovery by market participants (Kirzner, 1992), emphasizes the role of both the suppliers in introducing new products to the market place, and the customers in signaling preferences.

Under regulation the "invisible hand" is replaced by governmental[10] orders as the principal institutional device for assuring good performance. Performance in this connection means performance in favor of the customer (Kahn 1988, Viscusi et al., 2000). The "invisible hand" (Smith, 1776) is thus somehow tied by the regulation, the purpose of which could be arguable. Kahn (1988) discusses both legal and economic rationale for regulation and identifies three primary economic reasons for such regulation: 1) importance of the industry in question, 2) the fact that many of the firms enjoy a natural monopoly or 3) that for some reason the competition does not work well. Under regulation certain constraints regarding the performance of the firm towards the customer are thus set. These constraints often restrict the firm's freedom to set tariffs, choose their customers, or charge some of its costs to the customers. In addition in a regulated environment there are often obligations for the utility; such as "obligation to serve", "service level" or "provider of last resort". These oblige the firm to provide the service even though it might not be economically justifiable. However, these obligations are often coupled with surcharges that cover the firm's expenses. Often the regulations that a monopoly firm faces guarantee a certain return on the invested capital as a tradeoff for giving up a certain degree of

[10] Government in this context refers to the competent body forming such regulatory framework. It could be the national government, the state government or a supranational government, depending on the legal environment of the case.

decision-making power related to business decisions the company could otherwise make under competition. Sometimes, the regulations may exceed the level that could be regarded as justifiable to reach the defined objectives. If the democratic process does not provide "regulations for the regulations" and the legislative system encourages making the regulatory system even more demanding, the firm has the option to start a juridical process as a means to try to defend its room to maneuver. In regulated industries the interaction between the regulator and the firm is often one-dimensional, where the influence originates at the regulator and the firm has no option but to follow (Aldrich, 1979). The regulator is expected to be prudent in its relationship with the regulated (Beecher, 2008). According to the "whistle-blower policy", common in the US an individual employee of a regulated company who tips-off any breaches in the regulatory conduct of the regulated firm would be rewarded for doing so (Heys and Kapur, 2008).

Sometimes a monopoly in a society is the result of action not only by the firm but the government representing the perceived interests of that society. The privatization of the gas business in the UK[11] changed a state monopoly to what was in essence a private monopoly, while the competition was introduced later. Zhang, Parker and Kirkpatrick (2007) showed that privatization and regulation do not alone bring the expected benefits in economic performance. This would require introduction of competition.

Most private monopolies reflect governmental assistance and support in the form of exclusive franchises, a governmentally administered cartel, special immunities, licensure requirements law, barbering, tariffs and quotas (Friedman, 1975). Thus the problem of monopoly is not largely a problem of getting government to enact legislation against monopoly, but of keeping government from enacting and enforcing legislation strengthening and preserving the monopoly. Brätland (2004) discusses natural monopoly and the contestability theory and argues that the natural monopolist includes entry barriers into the pricing formula. As a result, prices would only reflect such a profit level that deter the competition from entering the market, but would not yield excess profits for the monopolist.

Sappington and Stiglitz (1987), when identifying three forms of governmental[12] control; indirect control, regulation and nationalization, found that regulation is directed at correcting market

[11] The government owned gas monopoly was formed as an instrument to facilitate the investments required to spread quickly newly discovered natural gas to the entire country.

[12] Governmental control obviously in a democracy has to reside upon the legislation passed by the parliament. The discussion by Sappington and Stiglitz (1987) does not make a distinction between the different individual roles of the parliament, government and the regulator.

failures of imperfect competition, imperfect information or externalities. According to Stigler (1988) the prime role of regulation is to redistribute income, although the position of von Mises (1928, 1979) and Rothbard (1962) and many libertarian scholars, is that this should not be carried out in the first place. Beyond this very general objective of redistributing income, the means that are at the regulator's disposal according to Stigler (1988) are to restrict market entry, set a protective tariff, to affect the substitutes and complements, or to fix the prices..

According to Stigler (1988) this regulation, sometimes bureaucratic and rigid by nature, can be intended to serve two goals. Firstly it can be intended to benefit an entire society or public at large or some subclass of it (Stigler, 1988) by maintaining the institutions (North, 1990, 1992) within whose framework the free market can continue to function (Kahn, 1988). This could be achieved by regulating volume (Viscusi et al., 2000), quality of service (Kahn, 1988; Viscusi et al., 2000) – such as access to energy to everybody – while maintaining reasonable return to the investors (Kahn, 1988; Viscusi et al., 2000) in order to ensure funding of the investments required to conduct the business. According toe Stigler (1988) the other would have no direct cause; as the political process defies rational explanation.

Stigler (1988) proposes that, in general, regulation is acquired by the industry and designed and operated primarily for its benefit. This behavior can be regarded as rational in light of the firm pursuing to obtain the monopoly position in the market. Majandar and Marcus, (2001) suggest that well-designed regulations have a positive effect on utilities, whereas those that are less-well designed have a negative impact. By well-designed they mean more flexible rules that give the firms "latitude" on how to meet the goal, and time to deploy new means and to set more ambitious goals that stretch beyond present practices.

The only aspect the government cannot command the business to do is to perform (Kahn, 1988; Lindblom, 1977). In this connection performance refers to the operational and financial performance of the company. The government can, however, induce the enterprise to perform by providing a set of market and political benefits (Kahn 1988).

In many countries[13] there is a regulatory mechanism in place for the approval of telecom, electricity or gas sales or distribution rates[14]. This has been designed to eliminate the opportunity to abuse market power (Stigler, 1988; Kahn, 1988; Viscusi et al., 2000). According to Lindblom

[13] In this context Country could refer to Nation State, Federal State or a State in the US.

[14] In many States in the US the rates need to be approved "ex ante", i.e. before they can be applied, whereas under many jurisdictions in Europe the rates can be regulated "ex post", i.e. the utility company can apply and introduce new rates while the regulator maintains the powers to alter the rates retroactively in case they are found unjustifiable.

(1977), however, the greatest distinction between one and another government is in the degree to which market replaces government or government replaces market.

Pelzman (1976) sees the potential of regulatory behavior to convert the supply-demand apparatus into constraint. Russo (1992) has shown that because monitoring costs (regulatory costs) are low firms easily adapts to the regulatory framework, and the increase in these costs leads to inducements for a utility to remove itself from this relationship and fundamentally diversify. Russo (1992) further indicated that a regulated utility and the regulator, though locked in a bilateral relationship, are more often adversaries than collaborators.

Comparing different governments' regulatory practices

To illustrate the variances in the degree of detail in regulatory practices under various jurisdictions, let us assume a society that is in complete state of anarchy; it has no structure, no state and thus no legislation or a law enforcement system. North (1990) calls such a state a tribal economy. North (1990) illustrates this by referring to Ellickson's study among the rural residents' in Shasta County California where they resolved disputes based on elaborate structure of informal constraints. In the absence of the formal state structure, the tribal society developed an informal set of rules with substantial stability (Ellickson, cited in North, 1990); deviant behavior was not tolerated because it was a fundamental threat to the stability and assurance features of the tribal group. In such a tribal economy exchange was possible and necessary because every member of the society cannot or will not perform all functions in the society.

The most extreme form of the tribal economy would be a "Crusoe economy" (Rothbard, 1962) where there would be no interaction between individuals, but everyone would act alone. If we exclude the scheme of violent exchange of ownership, any form of exchange between individuals is based on valuing the products in reverse order by the two parties, and that each of the parties knows of the existence of the other individual and the products that he or she possesses. Without knowledge of the other person's assets, no exchange of these assets could take place (Rothbard (1962). This direct exchange can take place providing that the value or the expected benefit after the exchange would be mutually comparable.

By using a variable that illustrates the degree of detail to which a society has standardized the interaction patterns between individuals, we can plot the tribal society North (1990) and Rothbard (1962), the model characterized by Lyon (1937) as organized crime, and all the known examples of present day organized societies, as different observation points along the same axis in an increasing order. The value of each observation point would thus reflect the degree of order

a society has standardized the interaction patterns between individuals, whereby the tribal economy would have the lowest score and the most detailed society structure would have the highest score. Thus we would create an illustration of "a regulatory continuum" where the regulatory framework stretches from non-existent to maximum and from more general to more specific. As every government exercises some degree of control over individuals, and restricts the activities of the business community, all known governments would find a point along this one axis. Sometimes, however, firms oppose the introduction of the rules. Although some rules of doing business are regarded as irritating and onerous, the business community would be the first to oppose the lifting of governmental regulation on competition (Lyon, 1937).

This regulatory continuum, illustrated in Figure 2-3 starts with the tribal economy (North, 1990) without any regulatory or legal framework of organized society at the left end of the continuum. As we begin moving right members of the society begin acting collectively giving up part of their liberty to a representative body and to an organized society in exchange for certain benefits that are obtainable this way. We pass through the phase of setting the overall framework of functioning society (Kahn, 1988) by passing the laws, creating of a juridical system including the law enforcement function (Stigler, 1982; Lyon, 1937; Viscusi et al., 2000), restricting or enabling certain individual transactions, defining terms for conducting business, or restricting the abuse of market dominance provided by competition restrictions.

Towards the right end of the continuum we would reach the other extreme that could be regarded as a state where the framework regulating the firms' action gets so detailed, and the number of regulations so high, that any deliberate activity would be impossible. How far right on this continuum a society then actually goes depends on the political intentions of the government and other bodies with jurisdiction over the business institutions. The right end could be seen to stretch to detailed rules impacting any single individual action of the firm. This could be allegorically illustrated as an "economic zero Kelvin temperature of society" where all "molecular motion" ceases.[15] This cessation of activities would be, however, self-imposed by restricting the freedom of individuals so that no activity would be possible. Obviously this extreme is as theoretical as the pure tribal economy.

[15] Absolute zero is the zero point on the Kelvin temperature scale at which all thermal particle motion and vibration would cease.

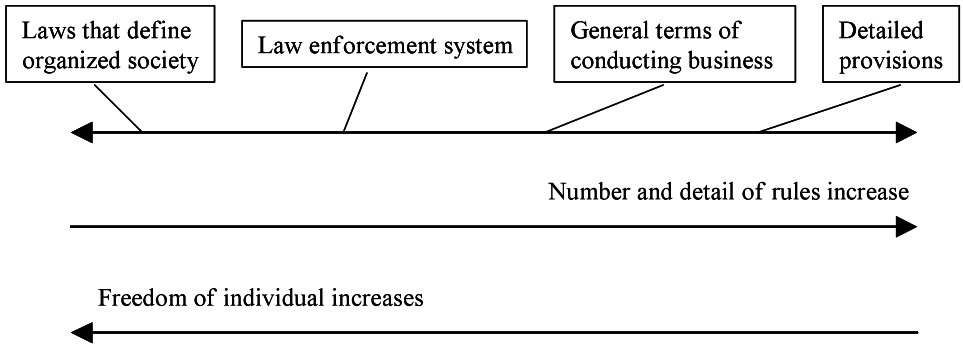

Figure 2-3 The regulatory continuum.

In the Figure 2-3, the freedom of firms to take action increases towards the left, as the number and detail of rules decrease. However, under complete freedom the firms would need to carry part of the functions of organized society themselves thus increasing the functions required by the firm. In the tribal economy as illustrated by North (1990) members of the society set the rules for acceptable behavior and thus resume the role of society structure. When moving right along the continuum the number of rules and regulations increases, thus gradually limiting the freedom of action by any individual firm. The firm's activities can concentrate on the most obvious, while the society carries an increasing share of the responsibility of non-core activities. However, by the increase in rules and regulations the standardization of different actions becomes more evident.

According to North (1990), the legal system is created to handle more complex disputes and entail formal structures to specify principal-agent relationships. The role of these institutions in society is to reduce uncertainty by establishing a stable structure to human interaction (North, 1990). Olson (1965) points out that in a free market economy the self interest of the individual reigns supreme, and the almost sole factor governing relations is the profit motive. In a theoretical free market economy the market would be competitive and government would not set any restrictions related to market entry. Under such an environment a monopoly would not require attention from the government (Rothbard, 1962).

North (1990) describes life and the economy as being ordered by formal laws and property rights, which are "*seldom the obvious and immediate source of choice in daily interactions*". In

the development of the detail and number of regulations in a society, property rights could be seen as social institutions that define or delimit the range of privileges granted to individuals, or as specific resources, such as parcels of land and water (Libecap, 1989). Barzel (1989) and Foss and Foss (2003) make the connection between property rights and transaction costs. Foss and Foss (2003) emphasize the role of property rights as determinants of net value and value creation. Foss and Foss (2003) list property rights as right to consume, obtain income from, and alienate a resource (Foss and Foss, 2003). Eggertson (1990) identifies three categories of property rights as: 1) Rights to use a resource, including right to physically transform it; 2) right to earn income based on the resource, including right to contract with third parties, and 3) right to permanently transfer the resource to another party. Barzel (1989) points out that exchange that otherwise would be attractive may be forsaken due to such costs. High transaction costs of political market have often resulted in property rights that do not induce economic growth (North, 1990) , and the consequent organizations may have no incentive to create more productive rules. At the introduction of competition, the property rights as determinants of net value (Foss and Foss, 2003) and value creation that characterized the firm environment prior to the change may no longer be valid, i.e. in the new operative environment the of the firm being changed.

When the functional environment of the firm is changed, the firm reacts to the changes in the environment and the reactions will reflect the history and resources of the firm (Tushman and Anderson, 1986; Hannan and Freeman, 1984; Nelson and Winter, 1982; Alchian and Demsetz, 1972), and the characteristics of management (Chandler, 1962; Alchian and Demsetz, 1972). Duncan (1972) characterized the uncertainties associated with this new operative environment by plotting the uncertainty along two diagonal axes, simple-complex and static-dynamic, in which he finds the dynamic-complex corner to be the most challenging, followed by simple-dynamic and complex-static corners of the quadrant. Employing the Duncan framework, environmental evolution in the context of this research is illustrated in Figure 2-4 as a reflection of this approach for the energy industry. These reactions will then subsequently influence the immediate environment of the firm and in an interaction taking the form of co-evolution (Murman, 2003).

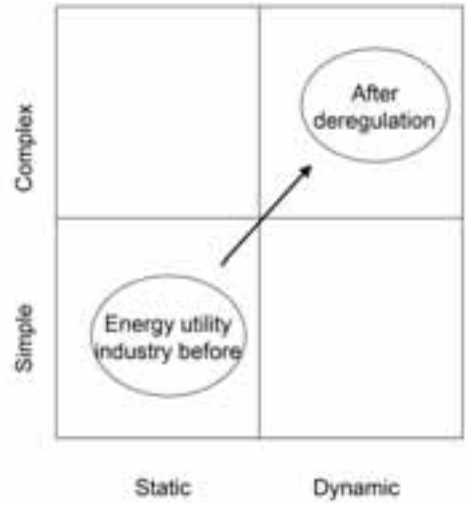

Figure 2-4 Electric utility industry deregulation illustrated by Duncan's (1972) framework for environmental change.

Eisenhardt and Bhatia (2002) discuss the impact of complexity theory and environmental complexity on the organization. They regard the state of the firm at the edge of chaos as the natural state between order and chaos, or a grand compromise between structure and surprise. Sorenson (2002) discusses the impacts of complexity at an inter-organizational level and the subsequent interaction and interdependence of the organizations.

The business environment of a utility prior to and after opening the market for competition is illustrated in Figure 2-4. Prior market opening the environment could be characterized as static and without competition from within the industry due to regulatory barriers. The appropriate level of return is determined by the regulator. After opening the market for competition, a certain degree of uncertainty becomes evident providing that the mechanism for opening the market is successful. The competition emerges partially from within the industry and partially from outside of that industry, and the stability that characterized the industry in the past is replaced by dynamism. Likewise, at the introduction of competition the key problems the firm faces transfer from simple to complex.

Under market deregulation there are no historical evolutionary models to follow and even regulatory institutions have little understanding of how deregulation will operate in the short term, and evolve in the future (Larsen and Bunn, 1999). It is especially the planning methods the

electric utilities used under monopoly times that become less useful and require replacement after deregulation (Dyner and Larsen, 2001).

Research on the impact of regulative changes on firms in different markets has been carried out in the context of natural gas price regulation (Jorgensen and Slesnick, 1987), the airline industry in the US (Caves et al., 1987), demerged Bell operating firms in the US after market deregulation (Smith and Zeithaml, 1996), the Spanish insurance industry (Cummins and Rubio-Misas, 2006), and the impact of regulative changes has been analyzed at a general level (Ahmad and Chiasakul, 2005).

The past is more than a prologue – the reputation capital accumulated prior to the deregulation is available for use by the deregulated firm (Daughety and Forsythe, 1987). Firms may need a lengthy time to adapt to the new prevailing market situation after years of regulation, but the accumulated learning is and remains within the firm. Reger et al. (1992) state that deregulation has a direct effect on firms' strategic choices and both direct and indirect effects on risk and return. A gradual shift towards deregulation will allow a firm time to adapt less risky strategies. Firms that do react in time to environmental variation tend to outperform those that do not; the strategies of the latter are likely to get "out-of-alignment". Reger et al. (1992) further show that at the time of transfer from regulation to deregulation, the most profitable kind of strategic move is from an unfocussed follower to an innovation strategy. To implement this can be really challenging as such a change asks for total change in the way the firm operates. Additionally Reger et al. (1992) emphasize the importance of the correct timing of decisions.

Deregulation clearly underlines the importance of the role of alert management in the firm. Stiroh and Strahan (2003) have shown that relative performance prior to deregulation becomes a predictor of future market share after deregulation. As regulatory barriers are lifted, several new opportunities arise for a firm. Attracting new customers from new markets becomes an opportunity to grow, while retaining old customers becomes a must, because regulatory restrictions no longer hinder competition from capturing market share. Pettus (2000) shows that the firms that followed a specific hypothesized resource development pattern generated higher growth than those following other development paths after deregulation. This, however, is not directly a function of deregulation, but a function of a firms' success in its strategies and resource allocation decisions.

Reger et al. (1992) propose that the direct effect of deregulations on firms' strategic choices is least destructive for the involved firms, when changes are enacted gradually as part of an overall

plan, and when affected firms have sufficient advance notice and thus enough time to adapt themselves to the changes. Cummins and Rubio-Misas (2006) studied the Spanish insurance industry at deregulation and found that the number of firms declined while the average size increased. Likewise inefficient firms disappeared through insolvency or liquidation.

At the time of opening the markets for competition, one expected outcome would be changes in the utility governance structure. Changes in the governance structures of the utility industry were not, however comparable to those in industrial firms (Rennie, 2006). Further deregulation would be expected to stimulate competition and lead to governance structures that provide greater control of the owner-manager agency conflict; especially if after deregulation several governance structures coexisted efficiently coping with regulatory uncertainty (Dalmas and Tokat, 2005). Dalmas and Tokat (2005) further pointed out that deregulation has a negative impact on the productive efficiency of firms, and that vertically integrated firms are more efficient than those that rely both on generation and contracting. Explaining (market) price of electric utilities, Blacconiere, Johnson and Johnson (2000) demonstrated that deregulation decreases the position of book value and increased the position of earnings.

At opening the markets for competition the structural inertia (Hannan and Freeman, 1984) accumulated in the firm may hinder the firm form seeing the changes of the key features of the for the organization partly due to the organizational memory (Hannan and Freeman, 1984: Nelson and Winter, 1982). The new firms entering the market could initiate competence-destroying discontinuities (Tushman and Anderson, 1986) within the industry. If we regard the structural inertia reflected in the behavioral patterns of the organization as a consequence of a selection process rather than as a precondition for selection (Hannan and Freeman, 1984) then obviously the firms may find it difficult to prepare for changes in the business focus. However, the firms that survive through the change process evidently have to choose right at least sometimes.

Based on the above discussion I can formulate the following Assumptions:

Assumption 2a

As a result of the introduction of competition and the subsequent changes in firm environment the overall locus of firm activity can be expected to shift.

Assumption 2b

As a result of the introduction of competition and the subsequent changes in firm environment the repertoire of action of a firm can be expected to change.

Assumption 2c

As a result of the introduction of competition in previous monopoly markets the role of political action in the action portfolio of a firm can be expected to increase.

2.5 INTERACTION BETWEEN THE FIRM AND THE CUSTOMER

"*Every individual, guided by himself, aims for a position and profession in the society where he best is positioned to increase the national profit, unless the laws prevent him from doing so*" (Chydenius, 1765). Chydenius further describes the laws that restrict individual's choices or force the economic activities to take a certain shape in form of professions as "*harmful for the nation and its' national profit*".

Chydenius discusses the competitive market and its' consequences for the entrepreneur in the following terms: "[the] *entrepreneur, who can freely exercise his trade, stretches his activities far; every moment he thinks how to move his products in the most effective way. If somebody wishes to gain too much, he will have to face competition that will come to share the profits with him thus protecting the citizens from selfish greed. Then everyone would have to satisfy with less profit from each product, but in order to manage everyone would have to move the products more efficiently*".

Chydenius' ideas build on the concept of competitive markets. In his view, as long as the entrepreneur follows the laws success is in his own hands. Chydenius did not explicitly discuss or describe the characteristics of a competitive market. In his statement the legislation sets the ultimate limits regarding the way the entrepreneur may proceed in pursuing his own interest while promoting "national profit".

Schumpeter (1964) defined the perfectly competitive market as a state in which no single individual actor has the capability to impact the prices directly or through factor markets. The concept of perfectly competitive markets is an ideal that the real markets seldom approach. There are only rare examples of this, such as worldwide markets of crude oil or other major commodities. In most other markets reality barriers hinder those markets from reaching the state

of perfect competition. The barriers that so hinder the competition from really working can be multiple; they can be of a technical nature derived from standardization, derived from legal decisions by the competent legal authority, logistical or related to the business situation, or the result of any of the characteristics of the market.

Williamson (1975) sees market transactions as involving exchanges between autonomous economic parties, whereas for Coase (1988) markets are institutions that facilitate exchange. According to Kirzner (1992) the Austrian economists perceive the market process as a systematic process of mutual discovery by market participants. Kirzner (1992:43) defines this as "*changes in the distinct set of forces unleashed at every moment in the absence of equilibrium …. These separate market processes run into one other colliding with or reinforcing each other so that the actual sequences of [a dependent variable] values are seen as highly complex outcomes of numerous interacting sets of forces*." Hayek (1973) emphasizes the role of prices in integrating dispersed knowledge and promoting a tendency to dovetail plans. In a competitive market the price of a product or service is determined at the market place as a striking price that enables the transaction between the buyer and the seller. The price is developed as a balance function between supply and demand and depending on the preferences of the observer; the resulting striking price can be characterized as high or low. However, if the transaction takes place, the price is correct for that time, place and occasion. In a perfectly competitive market each provider has so small a relative market power[16] (Schumpeter, 1964) that no individual actor is able to impact the price of the product or any factor market thereof. According to Coase (1988), in perfect competition an intricate system of rules and regulations would be needed.

In classical economic theory market is often seen as homogenous, where products are symmetrical; each provider obtains the same price and the cost of making the product available is the same. One of the contributions of the Austrian economists is the theory of the markets (von Mises, 1928, 1979; Hayek, 1973; Kirzner, 1992; Foss and Christensen, 2001). According to the principles of Austrian economics, entrepreneurs try to use the information dispersed in the markets and create new information that can subsequently lead to new products and an improved competitive position. Kirzner (1992: 44) formulates this by noting "*the entrepreneurial exercise*

[16] A commonly accepted measure of market concentration is the Herfindahl-Hirschman Index (HHI). The purpose of the HHI index is to measure the concentration in a market. It is calculated by summing the squared market shares of each firm competing in a market. The HHI number can range from zero to 10,000. In perfect competition, i.e. perfectly competitive markets the HHI would have the value of 0, while at monopoly the HHI would have the value of 10.000. In real markets the HHI value of 10.000 is much more common than a value that would be close to zero.

of alertness closes pockets of ignorance in the market and thereby moves the economic system towards a coordinated state".

In pursuit of own success, guided by the "invisible hand" working to promote the "national profit", the success of the entrepreneur will then be determined by the ability of that entrepreneur to collect dispersed information in order to differentiate itself from the others, obtain a preferable position among symmetrical products, move the products more efficiently, and as a result of his actions to obtain increased profitability.

The actions of the firm inevitably have an impact on the customer base it serves. Automatically, all the actions the firm takes impact directly or indirectly on customers. Such actions could be changes in price or other commercial terms, changes in customer interface management, or the way the firm organizes its activities. If the firm chooses to exit, i.e. divest its utility functions, it will as well have an impact on its customers. Russo (1992) states that firms and regulators are locked in a bilateral relationship. Being locked with the regulator; the firm is likewise locked in its relationship with its customers. Customers are the fundamental necessity for the firm, and customers, as a group, need a firm to supply them with e.g. electricity. In a competitive market firms may change, but the existence of a firm to supply the electricity is a requirement.

Customers purchase products and services from the firm, so any changes in the way the firm makes the products and services available to the customer base will ultimately impact the customer and the behavioral options available to customers. If the customer does not like the new commercial terms proposed by the firm, the customer could reduce consumption or ultimately switch to another supplier or alternative product, provided that this is an option. This follows the core process of the Austrian economic school.

If we assume that the firm acts like "economic man", primarily to maximize its own benefit, the firm could be expected to act so that it plans its configuration of actions to maximize its benefit stream (Siggelkow, 2001). When the environment changes, the most optimal configuration of actions obviously changes likewise, and thus the configuration of actions yielding the optimal outcome changes and evolves over time. Thus if we take snapshots of the process and compare two snapshots, the portfolio of most optimal actions obviously will have changed over time.

Mitzruchi and Yoo (2002) have shown that organizations that interact with their environment can obtain power over their business partners if customers are dependant on the interaction. The flip side of this is naturally, that in a competitive market such dependence cannot emerge. At introduction of competition the dependence between the customer and the firm obviously is cut.

Subsequently the customer may surprise the firm by switching to another supplier. Rao (2002) discusses competitiveness between two organizational communities. He identifies a competitive factor α that defines the directional competitive position between organizational communities A and B. In such a mutual interaction the two values for the vector α depend on the directionionality of the vector α.

In competitive markets the competition functions as the principal institutional device for assuring good performance (Viscusi et al., 2000). Customers should be the first beneficiaries of the introduction of competition and should expect to see the impact of competition on products, prices and company performance. In many electricity markets all over the world, major industrial and commercial customers are the ones that first use the opportunities that competition provides for customers in terms of increased choice, while the small residential customers tend to stay with their traditional suppliers and often do not use the opportunity to switch suppliers. The proportional importance of energy expense in the overall cost structure seems to be directly correlated with the readiness to change supplier. Similarly, the evidence from almost all markets where competition has been introduced is that customers with the smallest proportional shares of energy cost in their overall cost structure are the least interested to switch supplier. This could to be connected to the savings potential for the customer; the larger the bill the more you might be expected to reduce the costs by using the option to let competition work.

In competitive markets the negative publicity a firm receives will subsequently have an impact on cash flow, stock volatilities, and ultimately stock price (Luo, 2009). Firms with a long monopoly history will especially need to include customers' switching opportunity into their thinking. Although the customer would need to bear the switching costs, he or she is prepared to switch supplier if the service quality the firm provides does not lead into customer satisfaction (Meng and Elliot, 2009). Furthermore Wieringa and Verhoef (2007) have shown that relationship quality, switching cost, and current demand for products and services from the energy supplier represent important determinants for all customers. Walsh et al. (2006) found a weak relationship between corporate reputation and switching intention. However, Walsh et al. (2005) discovered three switching clusters: unsatisfied customers, relatively satisfied customers seeking change, and dissatisfied customers.

What actual level of competition will be reached after deregulation depends on an array of variables (Porter, 1980). The overall attractiveness of the market, the characteristics of the process of market opening, the remaining market power of the incumbent, availability of firms to

offer alternatives to customers, overall size and structure of the market, and the like will all impact how competitive the market will become.

Regarding products, firms need to assess if their customers' preferences are changing or if their needs were not met. There could be latent demand that has never been discovered. In their study on airline strategies after deregulation, Bailey and Williams (1988), show that deregulation caused a major change in carrier strategy regarding route networks. Obviously in the airline industry the product is the traveling service on a route the airline is offering to the customers. By changing the route offering the airlines intended to satisfy such customers' needs that had not been served before.

Greene and Smiley (1984) found that unregulated prices (the state prior to regulation, and therefore not the same as deregulated prices) for electricity were 20-50 per cent higher than regulated prices. The initiative behind introduction of regulation has probably been dissatisfaction with the prevailing price level, but without knowledge of the detail prevailing at the time it is not possible to assess market entry barriers and their significance on the lack of competition (Rothbard, 1962). Meyer and Leland (1980) found that regulated prices were significantly lower than unregulated, but that the customers would have preferred even lower prices. Viscusi et al. (2000) refer to a study prepared by Stigler and Friedland, in which the latter studied regulated and non-regulated electricity prices in the US in the 1920s and tried to eliminate the impact of other variable by using multiple regression analysis. Their finding was relatively surprising – statistically, regulation had no significant impact on prices.

Well designed competitive market reforms have led to performance improvements in a number of dimensions, and benefited customers through lower retail prices (Joskow, 2006). However, the experiment of competitive markets in California resulted in catastrophic results and could be regarded as an example of how good intentions can produce unexpected results. Cho and Kim (2007) have shown that in California between 1998 and 2000 a welfare loss can be explained by the then finite transmission capacity and the market power exercised by the generators. In California, the wholesale market was opened for competition while the retail market had price caps. As the retail market had such price caps and wholesale prices were rising rapidly, the utilities were not able to let the price signals go through to the residential customers. The retail customers, in the absence of the price signal, continued to increase consumption, which in turn made the wholesale prices even higher. The utility firms were restricted from using hedging and thus the situation was unbearable for firms. The result was the bankruptcy of one utility and re-

regulation for the entire state, with the concept of the state authority purchasing electricity for all utilities within the state.

The finding of Ghobadian and Viney (2002) that utilities need to achieve critical mass and some form of integration can be seen in many examples of former monopoly firms in the energy industry that have been faced with the competition. As there are no historical evolutionary models to follow (Larsen and Bunn, (1999) and even the regulatory institutions have little understanding of how to operate in the short run and evolve in the future, the strategy formation can be based only on available information maintaining the option for corrective action in the future. The role of the firm's R&D orientation (Stuart (1996) could be one way to navigate but it is always depending on signals of the R&D of its competitors. As technology evolves through periods of incremental change punctuated by technological break-troughs that either enhance or destroy the competence of firms in an industry (Tuschman and Anderson, 1986) the process the reconfiguration and transformation are essential forms to renew the organization (Alchian and Demsetz (1972). Though the continuous changes are often related to progress along a technological trajectory defined by a technological paradigm, the discontinuities are associated with the emergence of a new paradigm (Dosi, 1992).

Institutional isolating mechanisms may provide a firm with either industry leadership or obsolescence, depending on whether firm practices generate and sustain strategic isolating mechanisms in their competitive context (Jones, 2001). To enhance their development rival firms search for new capabilities both from within their organization and also for those that rest in their competitive environment (Huygens, Van Den Bosch, Volberda and Baden-Fuller, 2001). These search processes directed to find new solutions at both firm and industry levels in interaction makes industries and firms co-evolve over time (Murmann, 2003).

Based on the discussion above, the following Assumptions are presented:

Assumption 3a

As a result of the introduction of competition to former monopoly markets, firm's active in the market must define the strategic context they are in. They would need to determine if retail or distribution, or a combination thereof will be their business configuration.

Assumption 3b

As a result of the introduction of competition to former monopoly markets, firm's active in the market could be expected to evolve together with the industry and shift attention towards maintaining competitiveness, thus acknowledging the option of losing customers.

Assumption 3c

As a result of the introduction of competition to former monopoly markets, firm's active in the market could be expected to shift attention towards their internal structure, competences and the cost of producing the service.

2.6 INTERACTION BETWEEN THE CUSTOMER AND THE LEGISLATOR

The interaction loop is closed by introducing the customer's dual role, both as a buyer of the products and services and as a political actor i.e. the customer being at the same time a citizen of the state and thus a voter in elections. This functions as the link that ties the entire interaction discussed above back to political decision-making through the interaction between voters and the legislators.

The fundamental question here asks why a state exists – why have free individuals joined together to form a state to act collectively on behalf of the individuals that could also be acting individually. The classic benefit that the individuals could gain by joining forces is related to defense and law enforcement, but this discussion is omitted in this context. Obviously economic man, acting according to the well-documented behavioral principles, tries to maximize his own benefit stream, which in this particular case would be achieved by joining forces with other individuals.

Sometimes the state acting on behalf of the markets can be seen to produce "public good" in form of correcting a market failure (Buchanan, 1968). In the discussion, fuelled by the work of Keynes (1936), that has led to a vast number of publications discussing the interventionist policies of the state to correct market failures, the key such discussions is whether the state should intervene in the market or not. The counter-argument put forward by von Mises (1928, 1979) against interventionism because the markets fix themselves, is strongly supported by Buchanan and Tullock (1965); although the latter do acknowledge the supply and demand of public goods. Krugman (2009) sees a parallel between the great depression of the 1930s and the

crisis of 2008; and the role of government and the private sector in the causes of the present (2008) crisis. However, once the state exists, individual members of the state are integral parts of a larger more meaningful organism (Buchanan and Tullock, 1965). Obviously individual members of the state are permanently integral parts of an organism. They do not have the privilege to change their position in the state over time; sometimes being a member and sometimes not.

Although different individuals have different utility functions, Buchanan and Tullock (1965) regard the desire to maximize the personal utility of economic man as the basis of the theory of collective choice. Additionally, Olson (1965) lists as key motivational forces the gaining of prestige, friendship, social and psychological benefits, or for solely philanthropic or religious causes. On the other hand, Simon (1986) regards the motivation to gain economic benefit not to be the essential element for collective choice. Widerquist (2003) emphasizes the altruistic behavioral of man in society, thus objecting to the concept of economic man maximizing his own benefit.

Downs (1957) describes the utility function an individual may obtain from government as the difference between the expected obtainable utility incomes from government and from the alternative. Although the utility function is motivated solely by individual self interest in all aspects of the behavior, in the political mechanism individuals may co-operate to secure certain mutually desired ends (Buchanan and Tullock, 1965).

The course of action the state takes should, in theory, be intended to serve the interests of the constituents i.e. the voters, who in turn are the members of the state. Sometimes this objective is not reached, but the state acts against the interests of a particular group of its members. Benn (1956) even goes so far as to call the state the enemy. Rotberg (2004) discusses strong and weak states and the impact of this on the individual. Whether the state appears to be strong or weak is clearly not always the result of a deliberate decision of the individual, but an outcome of a political process.

Kessler (2003) discusses the characteristics of representative and direct democracy. Direct democracy refers to the people voting directly rather than using their elected representatives to make the vote. In a representative democracy, the voters use their democratic power in elections that take place infrequently. Gersbach (2003) plays with the hypothesis of every voter having not exactly one vote, but rather voters would having an uneven number of votes and found that such a situation could lead to the majority taxing minorities.

The voters' primary powers are associated with casting the ballot. Thus, the themes that become the most important during the election process often reflect true or perceived voter concerns (Downs, 1957), and these voter concerns are subsequently reflected in how the voter casts the ballot. Benz and Stutzer (2005) claim that citizens are politically better informed if they have extended political participation rights. Cebula (2008) suggests that voter turnout in referenda is influenced by the emotionality of the subject on the ballot.

Voters have several opportunities to form their opinions. Strömberg (2001) emphasizes the role of mass media in increasing the knowledge level among uninformed voters. Generally, it is assumed that voter participation increases when the expected obtainable benefit stream from the state increases. Greene and Nikolaev (1999) argue that this is not a general explanation, but that voter income level could better explain voter behavior. Daumann and Wassermann (2009) even propose that a market for votes could improve efficiency, though in democratic states this is often forbidden. Buchanan and Lee, (1986) present a model of assessing vote buying in a stylized setting. Krause and Mendez (2005) identify political business cycles.

The prevailing or perceived legislative framework for energy can have a major role in the electoral behavior of customers i.e. voters. At the time when the customers of a company are unsatisfied, they could be tempted to vote for representatives that declare an intention to shape the future legislative framework more favorably towards the customers. The economic rationale of voting (Buchanan and Tullock, 1965) may not always be sufficient to explain voter behavior. Voters lack the direct test of success or failure of the elected politicians' actions. A voter tends not to turn to those politicians whose policies have the best chance of success, but to those who can best "sell" their ideas. The average voter will never be able to discover the errors that his elected representative makes (Rothbard, 1962).

Piketty (1999) argues that recent developments regarding the role of political institutions in aggregating dispersed political information, emphasize the role of majority rule voting as a bringer of efficient information aggregation. Voters may find it impossible to distinguish economic responsibility in society while in the voting booth, and thus would be tempted to permit other aspects such as belonging to a social, linguistic or religious group to impact their voting decisions (Bengtsson, 2004). Downing (2005) questions altogether the traditional explanation of rationality of voting, and introduces new rationale. This new rationale consists of justifying the inherent interest in politics, meeting the perceived obligation to vote or obtaining satisfaction in having the opportunity to express their opinion, and enjoying the overall feeling of importance associated with voting. Sometimes energy-related questions are presented to the

people in a referendum; like such as the nuclear referendum in Sweden 1980. In referenda the alternatives according to which the voters need to take a stand are often very simplified extremes. According to Kessler (2003) the results of such referenda follow more closely the preferences of the majority, but in representative democracies determined policies are better tailored to relevant contingencies.

Downs (1957) claims that every government seeks to maximize political support, and the primary goal of government is re-election. Similarly, he states that a successful election is the objective of those parties now out of power. To reach this end the government has to know what the voters want because without having knowledge of their aspirations and wishes the government would inevitably run the risk of losing the forthcoming elections (Downs, 1957).

Besides listening to pressure groups, there are primarily two options available for government to find out what the voters want. The government may conduct polls, which is expensive, or it can rely on guessing what the voters want. This latter option, however, is obviously quite inaccurate. Thus, many governments often rely on the voices of various representatives or pressure groups that come forth and state their views. Page and Shapiro (1983) found that public opinion influences policy more than policy affects public opinion.

Individuals may establish pressure groups with the objective of influencing policies. Olson (1965) discusses the motivation of such pressure groups and suggests that in a society they counterbalance one another, thus ensuring that the outcome will not be biased. He even claims that such pressure groups should have larger constitutional role in society. He sees the role of pressure groups in a society as a form of democracy by claiming that eventually the interests of a larger number will win out over the special interests of the minority. The government listens to various pressure groups and lobbyists when considering which decision would yield most votes for the governing party or coalition in the next elections, and decides accordingly (Downs, 1957).

Voters in a democracy do not have equal influence on policy formation (Downs, 1957). Variations in the possession of resources and affiliation in various influential organizations may emphasize this disparity. Voters / customers can try to provide new momentum to the cycle and thus continue the process. The means available to voters / customers are to join together to amplify their voice, thus increasing the chances of their voice being heard at the legislative level, seek to purchase votes, providing that this is an option (Buchanan and Tullock, 1965; Downs, 1957), and to try to influence other voters by means of spreading information of voters opinions

(Downs, 1957). The latter is most effectively achieved by aligning with a newspaper that has wide popularity among the potential voters and the government (Strömberg, 2001). By doing so, the voter that intends to influence other voters is able to get his / her voice amplified substantially. They can likewise establish their own party, if there is an opening in the political spectrum (Downs, 1957), or try to influence through existing associations or other organizations. Bonardi, Hillman and Klein (2005) saw a parallel between political and economic markets in that the political is a collection of political markets where demanders of public policy interact with suppliers in the same way as economic markets. Another question is then how the effectiveness and efficiency of public policy could be measured, and which metrics would be appropriate to use (Johnsen, 2005) if people would be prepared to pay for public goods (Mitchell and Carson, 1988). Ando and Palmer (1998) suggest that the dominance of one interest group in the struggle for the influence over the decision maker may speed up of the process towards retail competition with the expected efficiency gains. Kroszner and Strahan (1999) even suggest that the relative strength associated with the potential winners could influence the outcome of the deregulation process.

Degan (2006) proposes that in the future the voter group is going to polarize into one group that gathers much information and one that abstains from voting. At election time, and during the time between elections, various groupings advance their interest by trying to influence elected officials. Horgos and Zimmermann (2009) have shown that interest group activity has a reverse impact on growth rates, and a positive impact on inflation rates. Coates, Heckelman and Wilson (2007) build on Olson's (1982) "institutional sclerosis" theory and found that under a stable environment interest groups flourish, and institutional stability and economic development are both related to interest group formation. Coates and Wilson (2007) show that interest group activity is negatively related to aggregate stock market performance. White (1996) indicates the need to demonstrate the short run consumer benefits could hinder the widespread adaptation of regulatory reforms. Kaserman, Mayo and Pacey (1993) find so many conflicting interest groups representing the deregulation formula, that they regard it as surprising that any deregulation in the long distance telephoning industry ever has happened.

Voters could find it easier to distinguish the link between their voting decision and policy changes on a local level than on a state or federal level. In local elections the link to policy implementation could be perceived to be more direct. The election themes that impact voters' choice should subsequently have an impact on the legislative process after the elections (such as electing the Governor in the State of Maryland in 2006).

When elected, the representatives' voting pattern could be expected to reflect the interests of their voters. North (1990) proposes that when observing the voting behavior of the legislator it becomes obvious that it is not possible to explain such voting behavior only by the principal/agent model, but the agent's own utility function – his own sense of the way the world ought to be – appears to play a role in the outcomes. Poole and Rosenthal (1997) analyzed roll call voting in the US Congress spanning two centuries and found that despite a wide array of issues facing legislators, over 80 per cent of a legislator's voting decisions can be attributed to a consistent ideological position ranging from ultra-conservatism to ultra-liberalism. In the US the term liberal is often used to describe the opposite to conservatives, though the conservatives are seen as keen supporters of liberty. Grossman and Helpman (2001) claim that voters, interest groups, and politicians all act in their own self interest, and that political outcome can be identified with the concept of equilibrium from game-theory. Van Deth (1997) points out that the structure of voluntary associations and intermediary organizations is dynamic and has changed, and points to a changing, but not declining, democratic culture in Western Europe.

The discussion above leads to formulating the following Assumption:

Assumption 4

As a result of the introduction of competition to previous monopoly electricity markets, electricity-related aspects could more easily become issues that activate voters in elections.

3 RESEARCH SITE

Before entering the research I will set the scene and discuss the characteristics of the electricity supply industry and the overall framework of making the electricity market competitive. The purpose of this chapter is thus to provide an overview of the special characteristics of the electric utility industry and its fundamental underlying business logic.

The electricity value chain (Porter, 1985) consists of the sourcing of primary energy, generation, high voltage transmission, the wholesale market including trading, low voltage distribution and retail (supply). As an example, Figure 3-1 illustrates the electricity industry value chain in the United States in 2003. In addition to the parts of the value chain, the Figure illustrates the amount of capital tied into various parts of the business value chain, and the revenue stream in that particular part of the chain. The capital tied in the value chain part is illustrated as the net book value.

Often, fuel sourcing is not presented as a separate part or is excluded altogether as an externality. However, in Figure 3-1 it is included in order to demonstrate the overall value associated with fuel sourcing. Furthermore it should be pointed out that in this presentation the retail market is included in the distribution rather than presented as a separate component in the value chain.

The amount of capital tied into generation is highest, followed by distribution, while the capital tied in the other components of the value chain is substantially lower. Subsequently the revenue base in generation is highest, followed by distribution.

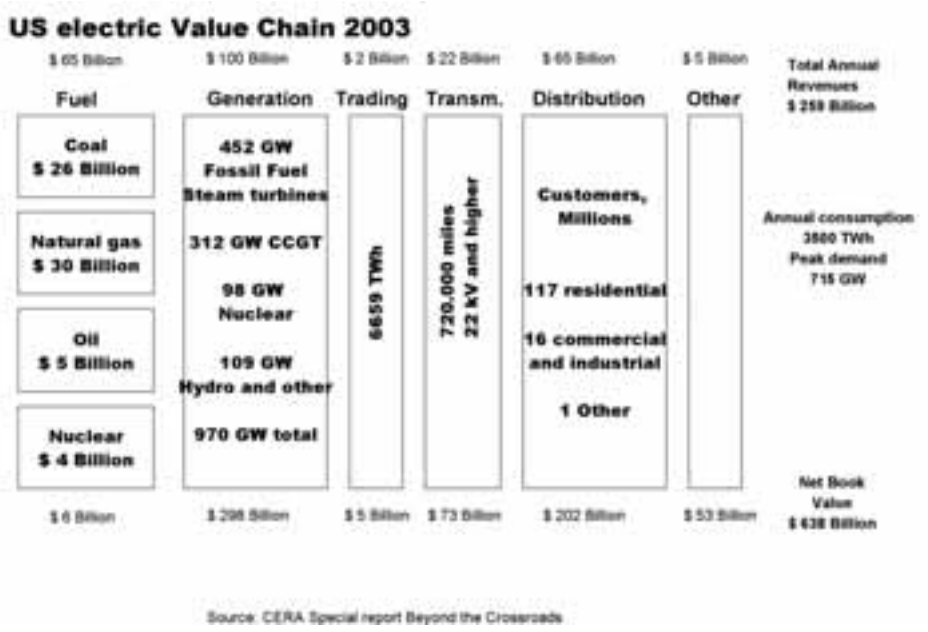

Figure 3-1 US electric value chain in 2003.

Within the electricity value chain, there are at least two distinctive markets. These are the wholesale market and the retail market, and both are discussed below. These two markets can be opened for competition either at the same time, or the opening of the retail market could be phased in later.

The *wholesale* market, which operates in a high voltage network environment, is characterized by large volumes. The trade can take place between generators, traders, large industrial consumers and utility firms. The products traded can be electricity, futures contracts, risk management services, transmission rights, capacity arrangements or any derivatives of these. They are often complemented with financial contracts traded on a defined market place. A wholesale market often takes place in an organized.

The *retail market* can be found in low voltage environment, where retail firms compete in contracting the supply of electricity to final consumers; residential, commercial and other. This competition takes place using a distribution network as a common carrier that can often be

regarded as a natural monopoly (Demsetz, 1968; Kahn, 1988; Viscusi et al., 2000). A market opening for competition is likely to change the competitive dynamics of the industry, although the visible impact may be delayed.

During the historical phases, the industry operating the electric business has seen several organizational options. Hunt (2002) has identified the following four possible phases in the evolutionary path of organization forms of electricity industry:

1) Vertically integrated monopoly,
2) Single buyer,
3) Wholesale competition,
4) Retail competition.

The first of these phases incorporates all activities under one company umbrella in the form of a vertically integrated monopoly. This model has been the traditional way to organize the electricity industry from its early beginning to recent times. The next phase opens generation to competition, permitting independent power producers to be connected into the network, however, leaving the dominant firm as the sole buyer of the generate power. In this model, the commercial terms of the transaction are often regulated by a regulator. As a variation of this model, in the Nordic Area[17] a group of major producers connected to the network were not directly competing with each other, but exchanging power between themselves primarily to provide reserve capacity and to optimize the overall costs of operating the electricity system. In the third model the wholesale market is opened for competition. This is the model that represents many of the US component markets; PJM[18] market as an example (Lambert, 2001). The final phase opens the entire market for competition. This is the model represented in the Nordic Area and in the UK.

In all models the wires businesses[19] remain as regulated monopolies. The transaction costs to perform the transmission or distribution functions using parallel channels would exceed the cost of the natural monopoly model. The natural monopoly model is accompanied by entry barriers in the form of licensing of the distribution business. The electricity market is not perfectly competitive, although, especially in the wholesale market, there are many characteristics of a

[17] The Nordic Area in this context refers to the geographically connected Nordic electricity market consisting of Finland, Sweden, Norway and Denmark.
[18] PJM is an organization. The letters originally stood for Pennsylvania, New Jersey and Maryland but the organization now covers large areas on the US east coast. It is a high voltage network operator and the largest electricity market place in the world.
[19] Wires business refers to owning and operating the distribution and transmission networks while letting others take care of selling electricity to the customers.

perfectly competitive market. Parisio and Bosco (2003) have shown that large generators have an incentive to restrict their supplies, thereby creating condition for higher prices. This is perfectly in accord with the behavioral pattern of a monopolist as presented by Rothbard (1962). In the foreseeable future, there will always be some actors whose influence in price discovery will be more significant than others'. Though Parisio and Bosco (2003) state that the efficiency of the wholesale power market is somewhat ambiguous, many power markets in the world are working well and provide benefits to the participants. However, even if they could work substantially better and the setting of prices could be more efficient, nobody has presented a working model that would bring the markets closer to the ideal of a perfectly competitive market in the Schumpeterian sense.

At an opening up of the electricity market the vertically integrated monopoly supply chain from generation to distribution and retail is cut and two markets are formed. By reference to Hunt (2002), the markets can be opened for competition only partly, or completely. This process can, and often is implemented in phases. The process is often phased in order that competition is introduced by first making the high voltage wholesale and generation market competitive, leaving the low voltage retail market opening to take place later. The existence of a well-functioning wholesale market with subsequent risk management features is a prerequisite for the functioning of a competitive open market in both wholesale and retail levels.

When the retail market is opened for competition, final customers may change electricity suppliers when they see this as fitting. A prerequisite for retail market competition is a functioning wholesale market, where retailers may purchase and sell electricity volumes. The emergence of a wholesale market place of electricity is essential for the functioning of a retail market because when customers change supplier, suppliers need to have an option to dispose of the electricity they no longer supply. Similarly after gaining a customer, suppliers must have a flexible way to source electricity at a price that reflects the true product value at the market place. Besides physical supply, such a market provides the opportunities to develop other products, such as long-term forward supply contracts and derivatives to cover the inherent price or volume risks or any other auxiliary services they need to extract from the network.

Joskow (2000) has considered the idea of why there should be a retailer anyway; could not the consumer get electricity cheaper through wholesale. His conclusion is that the role of the retailer / supplier is not obtained automatically, but the retailer must earn his position, i.e. the value added that the retailer provides to the customer must be equal or higher than the markup the

retailer charges on the top of the wholesale price; otherwise the retailer does not earn his place in the value chain.

The wholesale market is used for price discovery, so price of wholesale power is decoupled from a direct link to cost, reflecting primarily the supply – demand balance in network and transmission congestion, and secondarily the short-term marginal cost structure of the additional generating capacity at any given time. The price indexation previously used is thus no longer valid, and market participants will need an arrangement that can be used for managing price risks. The wholesale market, with forward trading features and financial products, can be established for and between the generators, retailers and traders without the need to open the retail market for competition.

Price discovery in the wholesale markets of electricity takes place through an auction process where, with increase in demand of electricity in a system, new plants are connected on line (dispatched) to maintain the consumption-generation balance. Depending on the actual operational procedures defined in the system, the plant last connected to the network is usually the lowest price bidder among the remaining plants not running but participating in the bidding. Remotely, the bid price reflects the short-term marginal costs of the system, but it is not directly the cost. An electricity generation system requires a certain amount of reserve capacity. Which plant has last been connected to the network impacts the quantity of remaining reserves that can, on short notice, be connected to the system. This in turn could impact the pricing of production at each new plant connected to the network. For example in PJM there is an incentive system in place to encourage new capacity development.

A prerequisite for the wholesale market to function properly is that access to the high voltage network must be opened to all participants symmetrically and without discrimination or cross-subsidization from other Strategic Business Units (SBU's) of the wires-company, or in any other fashion. Without open non-discriminatory access to the network the market cannot work properly. Operating the high voltage network can be organized in different ways, but giving operational responsibility of the network to a separate network operator, sends a clear signal of fairness to the markets.

As electricity cannot be easily stored, and travels at the speed of light, the amount of electricity consumed needs to be produced at the same time it is consumed. This is a complex requirement for the balancing of supply and demand both temporarily and maintaining the balance in the network. The task of the network operator in each component market is to ensure that at every

moment that there is sufficient generation capacity supplying the network. The operator determines the merit order according to which different generators are connected to the network to generate electricity.

In the Nordic market the operators of national networks use the technical capacity in co-operation with each other to transfer power between the national networks over national boundaries. This transfer capacity is, however, limited, which leads to price differentials from time to time. The principle of one price is true most of the time while transfer capacity-related price differentials emerge occasionally. Especially during peak consumption there will inevitably be geographically derived price differentials as the dominant generation form in Norway is hydropower, in Sweden hydro combined with nuclear, and in Finland primarily thermal power.

The birth of competition:

Often the introduction of competition is based on a set of more or less coherent administrative and legislative decisions reflecting a matrix of intentions to bring competition to the electricity market. With these decisions, however, it is only possible to create an environment that could be favorable for the emergence of competition. For competition truly to emerge in high and low voltage electricity markets, the following four elements are often regarded necessary, but not always sufficient to make competition work: The network operators need to yield symmetrical access opportunities to the network; it needs to be feasible for such marketers to emerge that are willing to provide initiative for the customers to switch: unnecessarily high switching charges need to be abolished, a “referee” with sufficient powers to oversee the fairness of competition needs to be established at the same time as the introduction of competition legislation.

A key point in the above is that it is only possible to create an environment where competition could emerge by administrative decision, but industry actions will ultimately be required. Thus, without the involvement of the industry, competition cannot emerge. The emergence of competition requires collaboration by the actors in the market or the emergence of new actors. This can, however, be non-voluntary acceptance of the situation and therefore only a pragmatic realization of the situation. In case the industry should not actively participate in the promotion of competition the authorities have tools at their disposal to promote the birth of competition.

I will discuss the four necessary actions required to enable competition to work, described above are hereunder more in detail:

1) A requirement for symmetrical non-discriminatory access opportunities to the network may be included in the administrative decisions in the form of the requirement to

establish Third Party Access rules, or juridical unbundling, etc. These will then require a certain degree of participation from the incumbent utility company in the form of timely action in favor of competition. Symmetrical access refers to granting access to any qualified body on similar terms without discrimination. These new entrants could be independent power producers, industrial plants selling excess power, utilities retailing excess power sourced over a variety of suppliers, traders acting in the market for profit, or actors from outside of the traditional industry.

2) The environment has to be feasible for emerging of sufficient number of credible actors willing to provide incentive for the consumers to switch. For a consumer to be willing to switch, there needs to be an incentive. Without a clear obtainable benefit a consumer will not act and the expected outcome will not be reached. In addition customers need to be confident about the capacity of the new supplier to fulfill its promises. Often this requires certain backup supplier arrangements requiring the involvement of the incumbent.

3) Unnecessarily high switching charges and other obstacles related to changing the supplier has to be eliminated so the benefit would not be absorbed by the incumbent. Additionally the associated administration should be relatively simple;

4) A “referee” to oversee the fairness of competition needs to be established, as there will be a need for a regulator or a competition authority to oversee the fairness of the market and the existence of real entry and exit opportunities. Very seldom in the electricity market can the state of competition be regarded as perfect competition in the sense described by Schumpeter (1964); thus, such a referee would be necessary to ensure that no dominant actor in the market is able to abuse the dominant position.

Even if these preconditions for competition to emerge accurately reflect real requirements, there are still aspects that could hinder competition from emerging. Energy is sometimes a marginal expense, especially in the retail market, so trying to get competitive offers does not seem to be worth the effort. The price differentials can be insignificant due to the lack of true competitive pressure at one extreme, or the emergence of cut-throat competition at the other. As a result, shopping will not provide the desired savings. Further aspects could be lack of a fallback supplier arrangement (supplier of last resort), or legislated advantageous fallback rates, which combined with a lack of credibility of the new suppliers, could significantly hinder competition from emerging. Similar harm to the promotion of competitiveness can be caused if the fixed

bundled rates are lower than the competitive rates. If the referee established to ensure fairness of competition does not have sufficient enforcement powers, this could significantly slow down the process. Legislation could be contradictory as a result of layered parallel legislative structures. This is especially the case in the US where the roles of federal and state powers can lead to confusion in electricity market structure. Long transition periods and arrangements could likewise shape the characteristics of the market. Finally there could be non-visible cross-subsidies in rates between different customer groups of regulated and non-regulated businesses.

The making of a sufficient set of administrative decisions resulting in enforceable laws and other regulations that bind the firms active in the market reflects political intention and determination to achieve the said objective of achieving working competition in the electricity market. These decisions can be made by a body that has sufficient jurisdiction over the electricity market. In case of a nation state, the decision can be made by national parliament, government or any relevant part hereof, or by a transnational body like the EU with jurisdiction over nation states. In the US where the Federal Government has little or no jurisdiction over state internal matters, the decision can be made by the state congress, state consumer commission or similar, or any other body with relevant jurisdiction over state electricity markets. The most important factor for a competitive environment to emerge is the political will and determination to make decisions, and the arrangements required to implement them.

It may be the case that the political determination is not clear, or it has a combination of different contradicting intentions. If this is the case, the path towards properly functioning electricity markets can become longer and more cumbersome. These decisions are by no means a guarantee for competition to emerge, but by administratively making and implementing this set of decisions it is possible to alter the market environment so that competition can become a reality. This creation of an environment that is favorable for competition may require several decisions that must also be consistent with the expected outcome. Because sometimes the impact of a decision does not push the process into the desired direction or bring the desired outcome, it may need to be replaced by a new decision that is more coherent with the original goal.

Hunt (2002) presents the following conditions for the electricity market to function:

1) many buyers and sellers – a lack of market power on both sides of the market,
2) demand and supply responsiveness to price,
3) liquid and efficient marketplaces,

4) equal access to any essential facilities,

5) treatment of subsidies and environment controls so that they do not interfere with the workings of the market.

The conditions presented by Hunt (2002) actually define the state after market opening and the conditions presented above characterize the conditions required for competition to emerge.

Giving consideration to Porter's (1980) five forces model, at the time of market opening, the balance of power can shift between customers and suppliers, depending on the supply situation. One company executive interviewed for this research stated that:

> *"Competition clearly shifts the balance of power between customers and shareholders on one hand and organized labor on the other. There is a clear shift away from organized labor, whereas in the purely regulated structure organized labor tends to be stronger. That's one discernable shift. As between customers and shareholders, the balance of power can shift either way depending on external circumstances; competition is good for the suppliers when you have shortages, and it's good for consumers when you have a plethora [of alternatives] and presumably it's good for the customers in the long term anyway. Initially competition shifted the balance towards the customers. Most utilities were able to work out transition arrangements that kept those shifts from being destructive to shareholders".*

4 RESEARCH METHODOLOGY

The purpose of this chapter is to review the relevant methodological approaches to research and to justify the methodological choices made. I will describe the methodology and the detailed process of collecting and analyzing the data with the ultimate objective of developing theory. To capture information on the strategic interaction of utility firms active in a market that is opening to competition, a qualitative case research methodology with a reasonable number of cases appeared to be the obvious choice. Section 4.1 is intended to describe the research design and process, the content of Section 4.2 concentrates on the determination of the sample. Section 4.3 describes the data, and Section 4.4 reviews the processing and analysis of the data and leads to development of theory.

4.1 RESEARCH DESIGN

A qualitative case research methodology framework was deemed the most appropriate for this research (Glaser and Strauss, 1967; Eisenhardt, 1989; Eisenhardt and Graebner, 2007, Bensabat, Goldstein and Mead, 1987; Yin, 2003). Table 4-1 summarizes the key characteristics different scholars provide to structure case study research. The scholars quoted below each provide a useful "instruction booklet" for preparing a study. Not all cover exactly same issues but the table below is intended to illustrate which aspects are illuminated by each of the scholars. A more detailed table illustrating the key elements defined by each of the sources, the ways they have defined case study research, the characteristics of theory generation, how the referenced research have helped to assess the formed theory, criticism of the case method, and possible areas where the case study method could be applied is presented in an Appendix A[20]. The summary table presented below is intended to provide a general view of the characteristics of each approach.

[20] The in depth comparison of the Case Study Research methodologies ii presented in Appendix B.

	Bensabat et al. 1987	**Eisenhardt 1989**	**Glaser & Strauss 1967**	**Ragin & Becker 1992**	**Yin 2003**
Phases / components included?	Unit of analysis, single vs. multi case, analysis and exploration	9 phase program	4 phase program	General discussion, not detailed instructions	5 phase process
Definition provided?	YES	YES	NO	NO	YES
Contribution to theory generation	YES, emphasizing the researcher contribution	YES, begins with no theory	YES, emphasizes confidence	YES, Mills method presented	YES, "following the instincts"
Tools for assessing the theory provided	NO	YES, characterizing good theory	YES, five point program for theory generation	NO	YES, emphasize validity and reliability
Criticism presented?	YES, descriptive	YES, complexity and idiosyncrasy	YES, emphasizes confidence and testing	YES, requires strong assumptions	YES, emphasis on validity testing
Applications for use?	YES, for early phase, practice based	YES, for situations where little is known	NO	YES, small N	YES, to explain, illustrate and explore

Table 4-1 Questions regarding case study research methodology.

The case study method is regarded as especially appropriate for cases in a contemporary phenomenon within its real-life context (Eisenhardt, 1989; Yin, 2003) and when little is known about the phenomenon (Eisenhardt, 1989; Bensabat et al., 1987). It results in developing theory that is often novel, testable and empirically valid, and that has an intimate connection with empirical reality (Eisenhardt, 1989). It also permits the development of a testable, relevant and valid theory that is based on the data obtained from the cases (Glaser and Strauss 1967). Bensabat et al. (1987) point out that case study is appropriate when research and theory are at their early, formative stages, and in sticky practice-based problems where the experiences of the actors are important and the context of action is critical.

Indeed, the fundamental difference between case study research and alternative methods is that case study requires less *a priori* knowledge of what the variables of interest will be and how they will be measured. Discussing the characteristics of grounded theory method Suddaby (2006) points out that grounded theory is neither perfect nor easy. Nor is it simply a routine application of formulaic technique, theory testing or an excuse to ignore methodology.

The unit of analysis in this research is the firm, the entire firm, rather than any specific part or division of it (Bensabat et al., 1987). Using this viewpoint puts the researcher in the position that is comparable to a shareholder considering various investment opportunities thus elominating the possible cross subsidy impacts within the firm (Dasmgaard, 2003). A shareholder could analyze the performance opportunities of a specific SBU[21] and use that data to assess the future development potential of the share price, but would have to acquire equity in the entire company. The case firms could be small or big, one business or multi-business conglomerates, or firms that have experienced substantial changes both in form and in scope at or after market deregulation. These firms could have been initiated by the evolutionary process in competitive dynamics at the market opening resulting in consolidation of the industry, structural changes due to regulatory requirements, i.e. unbundling of offering, or structural pressure from the shareholders.

The degree of vertical integration over the value chain may vary between various component markets and the firms depending on legal, regulatory and other restrictions or opportunities. The firms' business presence in various parts of the value chain in different component markets could be different, depending primarily on strategies of the firms and the prevailing regulatory framework. It would be interesting to analyze entire component businesses of the firms, but this would require access to such company internal reporting information that is normally not available to outsiders. Many of the firms studied in this research (see chapter 5 for a full description) have changed their organizational and operational structure during the time span covered in this research. Thus concentrating on a sub division of a company or an SBU, and carrying out the analysis on that SBU level (e.g. distribution, retail or generation) would not have been possible without such in-depth company internal information that is not regularly publicized. One could say that the unit of analysis in this research is similar to that for an investor; he or she has to observe the firms as a whole without being able to penetrate deeper in the internal calculus of the company. He or she would have to invest in the whole firm and not any single unit or SBU of it.

[21] SBU refers to Strategic Business Unit.

Often the level of analysis refers to whether the analysis takes place on the micro, meso, or macro level. In this context the analysis primarily takes place on a micro i.e company level leading, however, complemented by macro level theory formation. According to Yin (2003) case study research can take place on three levels: exploratory, descriptive and explanatory. Although the collected data is sometimes analyzed by using numerous levels of analysis, Langley (1999) warns of using multiple levels of analysis because these may be difficult to separate from one another. In this research the level of analysis is primarily explanatory (Yin, 2003), but on occasions, all of the other levels of analysis have been used to complement the analysis.

The core of case study research is to select one or alternatively a small number of well-defined cases and study these intensively with the aim of building theory based on the material collected. Case studies typically collect data from one or a low number (small N) of cases using multiple data collection methods, whereas statistical methods typically employ a large volume of data from different sources representing multiple case firms. In this respect case study research approach is substantially different from statistical methods.

When selecting cases for this research I screened the numerous component markets both in the US and in Europe. The opening of the energy markets for competition is, in many component markets, still either in an embryonic phase, has been implemented to a limited extent or has not been implemented at all. Moreover, the number of firms active in the selected component markets was lower, paving the way for a small N. Thus the number of cases in this research remained at a relatively low level; i.e. one from the US and three from Europe. Including such a small number of cases leads subsequently to using the Mill's method[22] (Ragin and Becker, 2005).

The cases in this research were selected from component markets that have been opened for competition to a sufficient extent and for a sufficient number of years. In addition there needed to be evidence of competition taking place in the component markets to qualify for participation in this research. The number of selected cases had to be sufficient to enable a thorough analysis of the cases, thus eliminating the possible distortions from a single case design, but low enough to enable a thorough analysis in a natural setting (Eisenhardt, 1989; Bensabat et al., 1987) of each case for the purposes of theory development. In fact, it would be very difficult to increase the number of cases in this research because the markets in which electricity has been made competitive both in the US and in Europe are in fact a rarity. In the present research the number

[22] See Mills' method described in Chapter 4.1.4

of cases permits in-depth analysis of each single case, but still facilitates pattern matching between the cases.

Glaser and Strauss (1967) address the researcher's "job and training as to do what these laymen cannot do – to generate general categories and their properties for general and specific situations and problems". Thus as we have now discussed the actual research process, the remaining issue is the formation of theory. The core ontological assumption in this research falls into the category that Morgan and Smircich (1980) categorize as reality as a "concrete process", and the basic epistemological stance can be characterized as research on "systems and process change". These categorizations subsequently attach this research to a selection of certain subsequent steps such as choice of research methods and assumptions regarding the viewpoint. Suddaby (2006), however, points out that when developing theory using the Glaser and Strauss grounded theory perspective, the researcher cannot closely follow a guidebook because there is not one.

Yin (2003) discusses the research design and points out that it "is the logic that links the data to be collected to the initial questions of study". Further, he defines four conditions that are required to be maximized in case study research: construct validity, internal validity, external validity and reliability.

Glaser and Strauss (1967), argue that it is the intimate connection with empirical reality that permits the development of a testable, relevant and valid theory. According to Bensabat et alii (1987), one of the fundamental differences, between case study research and other alternative methods is that it requires less *a priori* knowledge of what the variables of interest will be, and how they will be measured. Bacharach (1989) regards the theory as a statement of relationships among concepts within a set of boundary assumptions and constraints. For this research the boundary assumptions are related to the time of opening the energy markets for competition in the US and in Europe. Bacharach (1989) defines the constructs as terms that, though not observational, either directly or indirectly may be applied or even defined on the basis of the observables.

Although Eisenhardt (1989) points out that theory building based on case study research begins as close as possible to the ideal of no theory, she means by this that the researcher should not have any preconditions or mindset that would bias theory building. Yin (2003), however, characterizes the theory development part of the design phase as essential, especially in instances where the objective would be to develop or test a theory. Glaser and Strauss (1967) suggest that the researcher should enthusiastically start generating theory and should recognize theory

generating as the primary objective. The researcher should notice that evidence and testing do not destroy a theory but only modify it, and a theory is only replaced by a better theory. Though Eisenhardt (1989) emphasizes the ideal of initiating the research as close as possible to no theory, she does not regard the random selection of cases as either necessary or even preferable. *A priori* constructs can also help to shape the initial design of theory building research (Eisenhardt, 1989). The goal of sampling is to choose cases that are likely to replicate or extend the emergent theory; although at the initial stages there should not be a theory (Eisenhardt, 1989).

In case selection the danger of jeopardizing the theory by selecting cases that initially reinforce the emerging theory while abandoning cases that clearly do not support the initial theory is always present (Collier and Mahoney, 1996; Curtis et al., 2000; Bennett and Elman, 2006). For the present research this argument is of major importance; most of the energy firms do not properly represent such markets that would have been opened for competition and thus do not provide representative results. The obvious main assumption prior to commencing the research project was that the opening of the market would result in new firms entering the market and an increased level of competition, which would then subsequently result in reduced profits for the incumbents that previously enjoyed a monopoly, and this fundamentally increasing pressure to take action and adjust strategy and resource configuration. In this research, giving up all impressions regarding what could have taken place at the time of the opening up of the market would not have been practical. These preconditions would have already led to bias through the selection of cases (Collier and Mahoney, 1996; Curtis et al., 2000; Bennett and Elman, 2006).

Langley (1999) indicates two possible strategies for analyzing process data that could be used in this research; process theory and variance theory. As she points out, it is difficult to keep these two options separate as the actual data is intertwined. The key strategy for processing the data, in order to provide information on the key Research Questions, concentrated on the variance theory approach, but aspects of process theory were included. Primarily the concept of Temporal Bracketing (Langley, 1999) was employed for sense making, but at times it was deemed necessary to complement the picture by employing a visual mapping strategy. The energy markets were made competitive over different time frames and schedules, requiring indexation accordingly. For illustrative purposes visual mapping was used as a support technique.

Mill's method (Lieberson, 1985) provides an interesting opportunity to perform a comparative analysis in a small N environment. The basic premise is that the dependant and independent

variable of cases are illustrated in a matrix. The cases are compared to each other so that the dependent variable of two cases with different values and the determined independent variables are arranged for comparison on order to demonstrate the potential differences in independent variables. This methodology would have obvious merits regarding the identification of the possible causes of differences in the dependent variable. This method should help the researcher to identify the key independent variable that influences the value of the dependent variable, providing that there are no systematic causes for bias in the analysis.

Glaser and Strauss (1967) suggest that the researcher should recognize theory generating as the primary objective, and note that evidence and testing do not destroy a theory but they only modify it, and a theory is thereby only replaced by a better theory. They further illustrate the theory generating process as "The constant comparative method", which consists of four simple phases. In comparison, Eisenhardt (1989) identifies nine phases in the theory generation process[23]. Bacharach (1989) sets two criteria for the evaluation of theory; falsifiability and utility. By falsifiability he refers to the possibility to refute the theory by experience. By utility he refers to the ability of the theory to explain and predict.

In this research I will use the cyclical co-evolutionary interaction model, as proposed by Murman (2003). In this context the concern of Lewin and Volberda (1999), however will need to be observed. They propose specifically that sequence analysis be used to complement co-evolutionary research. This research contains dynamic phenomena, which involves firm microevolution, industry macroevolution, environmental and technological evolution, and co-evolution processes within a system. Thus in this co-evolutionary research My intention is to bridge and reintegrate strategy and organization theory within a holistic framework.

4.2 SAMPLE

The viewpoint used in this analysis is that of the electricity marketing / retail company. This model concentrates on the company that was primarily active at the time preceding and following the opening of the market for competition. The sample selection process resulted in case firms that represent such relevant markets from both Europe (EU 15), and the United States where retail electricity market has been made competitive or competitive to such an extent that where is evidence of the competitiveness of the market.

[23] See Appendix A for a more detailed description.

In the EU and US, both consisting of a number of component markets that cover a defined geographical areas, it turned out to be quite hard to find markets that are competitive in the Schumpeterian sense[24]. The markets in the EU often coincide with national markets or other administratively defined geographical areas. In the US the component markets' boundaries vary from case to case and can follow state boundaries, boundaries defined within a state, or groupings of utility firms' business areas, or some other method.

At the start of the research process I performed an initial screening of the primary characteristics of the key markets. For this purpose I screened information from the European Union, the US Department of Energy (DOE), CAEM (Center for Advancement of Energy Markets), Eurelectric and the Edison Electric Institute (EEI). This was necessary in order to get a general picture of the competitive situation in different markets, and thereby enabling a subsequent narrowing of the scope of the research towards selection of the sample. This initial screening combined with a personal knowledge of the industry enabled me to take further steps in the research process, determine the sample for the research and identify what additional information would be necessary to ensure a successful research process.

The market opening process has been advancing in the component markets both in the US and in Europe, although the pace has been very different between various component markets. To cover most of the conceivable market opening / company reaction / performance differential permutations as cases, I selected firms from both the EU and US markets. I did not select failed firms, whose financial results would not have been satisfactory, as these firms may easily perish or become attractive acquisition targets for more successful firms. My initially assessed construct was that the primary features of the successful firms are the features that the failed firms were lacking.

In the electricity utility industry the dissimilarities between the different markets are caused by many factors. There are a number of different possible regulatory models, the phase of deregulation in different markets varies, and the open market practices between the EU and the US are dissimilar. The motivational backgrounds for deregulation in different markets, the general expected impacts on the market, the number of players, and the relative market positions of each actor constitute a matrix of factors causing asymmetries between markets. In a way, one could even say that every case is so different that possible similarities are only coincidental.

[24] This refers to the Schumpeterian (Schumpeter 1942) definition of competitive markets, i.e. a market where no single actor may impact the price of the product at the market or any factor market thereof.

Although in Europe energy market deregulation was initiated by the EU, and their directives set the overall rules for actions and timing, the differences between component markets inside the EU are still substantial.

Notwithstanding the above, choosing the appropriate case companies is important. Miles and Huberman (1994) discuss the six principles of sampling: 1) The sampling strategy should be relevant to the conceptual framework and the Research Questions addressed by the research, 2) The sample should be likely to generate rich information on the type of phenomena which is to be studied, 3) The sample should enhance the generalizability of the findings, 4) The sample should produce believable descriptions / explanations, 5) The sample strategy should be ethical, and 6) The sampling plan should be feasible. Curtis et al. (2000) find these principles valuable for qualitative research. Bennett and Elman (2006) are concerned about the potential for bias in case selection because researchers can unintentionally select cases that reinforce the theory.

4.2.1 Selection process of the US cases

Constellation Energy was selected to be the primary case company, and chosen to represent the US market. Constellation was selected primarily because it covered the entire electricity value chain, thus being very strong in retail and generation in the PJM area where the competitiveness of the markets is high in US terms. Constellation had used the opening up of the electricity market and thus expanded its business base substantially.

The United States consists of multiple component markets. In general the markets in Texas and the North East are open for competition, whilst the states in the South and West have not, for multiple reasons that are beyond the scope of this research, opened their markets for competition. The framework for market opening in the states that have decided to open the market is quite different. In the US there is no general federal decision to open markets for competition, and different states have, in this respect, chosen quite different strategies.

When selecting the component markets in the US for this research I followed an algorithm developed by a US think tank promoting the competitiveness of the energy markets, the Center for Advancement of Energy Markets, CAEM. This method incorporates various variables illustrating the state of energy market restructuring in different states. The index was based on 22 attributes that, according to CAEM, function as an effective platform in transition to competition. The RED index is designed to illustrate, on an aggregate level, the state of

advancement of energy market competition. At the time the present research was conducted the most recent edition was published in 2004 and covered data for the year 2003, this reflected the fourth edition of the index calculation.

In the 2003 version of the report CAEM had included some countries in Europe and Asia. The RED index is not directly applicable when comparing the state of advancement of energy markets in the US and Europe; if such a comparison was carried out the index would need to be expanded to include the European countries in greater detail. As the UK was included in the RED index calculation, it reinforced my view that some of the European countries' energy markets were well advanced compared to their US counterparts.

Rank 2003	STATE	Index 03	Index 02	Index 01	Index 00	Index 99	Average rev c/kWh
1	Texas	69	69	31	3	0	6.49
2	Pennsylvania	67	67	67	62	55	7,65
3	Maine	64	64	59	54	42	9,69
4	New York	60	61	58	47	38	11,38
5	District of Columbia	54	54	54	47	0	7,52
6	Maryland	52	52	53	47	4	6,74
7	Michigan	50	52	53	31	11	7,11
8	New Jersey	50	50	50	37	28	9,47
9	Massachusetts	42	42	34	31	31	9,49
10	Virginia	42	42	34	18	3	5,94

Table 4-2 The rank order of the open energy market in the top 10 US states according to CAEM.

Table 4-2 lists the top 10 positions in terms of advancement in the energy market, according to the CAEM US analysis, RED Index. A higher numerical value of the RED index indicates a more advanced electricity market on an aggregate level.

The overall US - Canada - Mexico transmission system consisted of three synchronized networks; the Western Interconnection, Eastern Interconnection and the ERCOT. The latter covered most of the State of Texas, while Western Interconnection incorporated the states in the Rockies and westwards and includes Canadian Western Provinces and some areas of Mexico. The eastern Interconnection incorporated the states east of the Rockies, including the eastern provinces of Canada.

For historical reason most of Texas forms its own self sufficient synchronized transmission network and the power transfer between ERCOT and the Western and Eastern Interconnection takes place over direct current (DC) links.[25] Thus Texas, although high scoring in the CAEM scoring has characteristics of an island market and could thus be regarded as a special case. For the purpose of this research I preferred firms that operated in states where the transmission of power over the state boundaries was not restricted by direct current links. The transmission system in New York State is a separate market, as is the New England ISO[26] incorporating the states of New England and representing two states in the list. The PJM states dominate the top-ten CAEM market opening list with six states.

In the CAEM study in 2003, the value of benefits from the introduction of competition in the energy market in PJM area were estimated to be 3.2 billion USD in 2002, corresponding to 15 per cent of the consumers' electricity bill, or an average rebate of 117 USD annually for one household. The study covered only residential, commercial and industrial final customers. The possible macroeconomic benefits for the society as a whole were not covered by the study. CERA analyzed the impact of deregulation in the overall price level in the US power markets and their finding was that over a period of 1997-2004 the total gain enjoyed by US residential customers was USD 34 billion. The overarching view resulting from this is that lower electricity price is the key positive outcome of market opening.

[25] There are multiple technical and historical reasons for the DC connection between ERCOT and the rest of US. A discussion regarding these reasons is omitted from this research.

[26] ISO stands for Independent System Operator, i.e. a transmission system operator that is independent from the commodity interests. An ISO could also operate distribution systems.

Figure 4-1 The state of energy market restructuring in the US, 2004.

The possible cases for further analysis were chosen primarily from areas where market restructuring has been completed and the market is predominantly functioning. PJM and the firms primarily acting under the PJM regime was thus primary target when choosing cases for further analysis. Constellation Energy emerged as the most interesting company for more careful analysis.

4.2.2 Selection process of the European cases

At the time of undertaking this research the number of member states in the EU increased to 27 from 15. Although the new members are obligated to include EU legislation in their national codex, in practice they have either not opened their respective markets for competition or they have opened so recently that there is not sufficient statistical information available on these markets. Even within the EU 15 the electricity markets that were opened for competition for such a period that enables the collection of historical data could only be found in UK and the Nordic area. Thus it was obvious that the case firms were selected to represent these component markets. The selected case firms representing the EU 15 were Centrica (UK), Fortum (Finland) and Vattenfall (Sweden).

One key difference between the US and the EU is how the legislation is passed. While in the US each state may legislate relatively freely within the state and Interstate, commerce falls under the jurisdiction of the Federal Government; in EU the laws passed by the EU have to be included in the national codex by all member states. The rules of opening up of the European electricity market were initially set in Directive 96/92/EC, adopted by the Council of Ministers on December 19, 1996. The Directive established common rules for the generation, transmission and distribution of electricity. These rules were intended to pave the way for the introduction of competition in electricity markets of the member states by introducing symmetrical competition. According to the requirements set by the Electricity Directive the member states had, as a rule, two years to bring into force the laws, regulations and administrative provisions necessary to comply with this Directive. However, the first package did not achieve its objectives and thus it was subsequently complemented by second and third packages. The second package for opening the EU internal energy market for competition was introduced as Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 repealing Directive 96/92/EC. At the time of the research the third package had passed the European Parliament and was expected to become legislation after being published in the EU Journal. Again, at the time of the research there had been discussion about introducing a fourth package.

According to a study prepared by the consulting firm Oxera for the UK Ministry for Trade and Industry the most competitive energy market in Europe, in 2002 and in 2003 was in the UK, followed by Sweden and Finland. This was confirmed by the EU commission report "*Towards a competitive and regulated European gas and electricity market*" published in July 2004. As the intention of this research is to investigate utility firms in markets that have been made competitive, it is natural to choose those firms from the markets most open for competition, i.e. UK, Sweden and Finland. This subsequently led to the choice of case firms representing these component markets.

In Sweden and Finland the most traditional firms were deemed to be Vattenfall and Fortum. Both of these organizations have a long history in their respective home markets, but had also established a position in each other's traditional markets, thus blurring the image of one key company home market domination. Given this, I chose Vattenfall and Fortum as case firms.

The selection of case firm in UK was not as straightforward a choice. The UK electricity market had seen substantial changes since early the 1990s and the industry structure had been modified on several occasions. The initial industry structure of a vertically integrated monopoly was originally cut into regional distribution / retail firms and generation and transmission firms. Most

of these had seen changes in ownership structure and the introduction of new products[27] in their sales portfolio. However, the company that had changed the overall image of the industry was Centrica, which was formed of the former sales arm of the former gas monopoly, British Gas. Centrica, with its roots in the gas industry, had emerged as the market leader in electricity retail, and thus it was deemed a justifiable choice for this research to pick Centrica as the case company to represent the UK electricity retail market.

4.2.3 Brief presentation of sample firms

A general presentation summary of the key features of the case firms is presented in Table 4-3 below.

Company	Established, year	Headquartered	Net Sales USD 2005[28]	BDI[29]	Electricity customers	Generation MW
Centrica	1972/1997	Windsor UK	25,1 Billion	0,52	6 mill.	3 400
Constellation	1816	Baltimore US	17,1 Billion	0,28	1,2 mill.	12 500
Fortum	1932	Espoo FI	7,5 Billion	0,71	1,4 mill.[30]	11 300
Vattenfall	1909	Stockholm SE	17,7 Billion	0,72	5 mill.[31]	33 000

Table 4-3 Key data of the case firms.

[27] Gas sales.
[28] Currency conversion using May 24, 2006 exchange rate.
[29] BDI stands for Business Diversity Index and illustrates the diversity of the company's business, see Appendix B.
[30] Annual report 2005.
[31] Annual report 2005.

All the selected case firms have a relatively long history, stretching back over more than 100 years into the early history of the energy retail and distribution industry. However, the firms today have evolved far from what they were in the past. They all have at some point in their history enjoyed either a direct monopoly or an arrangement of a cartel nature restricting competition. All the firms' markets have been opened and made competitive, and competition has really emerged in all the case companies' businesses. However, in this respect the case firms differ. They have followed different strategies after the introduction of competition. With the exception of Vattenfall, they are all listed utility firms incorporating the whole value chain from generation to retail. The focal point of growth after introduction of competition has, however, been quite different. Some of the case firms have tried to grow by merging with similar firms thus maintaining the core nature of their business activities. An alternative pattern has been to organically grow new business areas as a means to complement the existing ones. Consequently the nature of the business activities of the different firms has grown in different ways.

4.3 DATA

To provide information on the interaction of the firms with their operative environment at the time of market opening for competition I tried to create a sequence of events that would characterize the development. To achieve this I gathered information on the chosen sample firms' decisions both prior to and after making the markets competitive, and complemented this information by financial data and information collected from public sources, such as regulatory authorities. Firm decisions are probably best documented in the company internal documentation, but that documentation is not available to the public or for research purposes. The required data can be classified into three key categories, accounting data, event data, and data from confirmatory interviews.

Once the sample had been determined, it was obvious that the way to begin the data collection process was from the primary sources, i.e. from the firms themselves. The listed firms appeared to be a bountiful source of information, because they constantly have to satisfy the information needs of investors. When the firms need to access capital from the markets they must satisfy the information requirement of the market, thus keeping the investors aware and up-to-date of the situation the firm is in and ensuring that the investors remain interested in injecting more capital into the businesses of the firm. The decision regarding what information to publish and when, can obviously be only made by the firm and the investor has no way to know if all information

has been made public and if there was further information the investor should know in order to be able to assess the potential future value of the investment. However, a firm is penalized by the market if it is found not to provide correct and complete information.

In order to enable triangulation (Jick, 1979), the collected data had to come from multiple independent sources. In this research triangulation was performed by using data from the firms themselves (including SEC and regulatory filings in the US), articles in publications (see references for a list of pub;ications), and through confirmatory interviews. The interviews were performed in the case firms themselves and other firms, at regulators, and with well-informed individuals (active and retired top executives, consultants, regulators, representatives of branch and research organizations). Using all these sources of data was instrumental to recreating, for every case firm, a sequence of events that had been initiated both by the firm and by the forces in its environment. This sequence of events was subsequently complemented by the accounting data describing financial outcome. The obvious benefit of recreating history is that the outcome is eventually known and can be reconstructed by combining data from multiple sources. This is not, however, the case for an investor.

Practically all of the available information was collected, pushing the time span of the collected data as far as possible back into the history of the firm, and consequently including the most recent information that was available. However, the availability of data was limited in the case of Fortum and Vattenfall who had already experienced the processes relating to opening of the market for competition in the late 1990s.

Collecting accounting-based information is part of many research processes in the field of management research. Even through the accounting-based data was not at the core of information gathering, it was still deemed essential to creating a complete image of the firm in question. This is because accounting data provides a good source for triangulation.

For financial data collection I referred to the definition of accounting[32] by Glautier and Underdown (1995) presents "the provision of information about the financial position, performance and financial adaptability of a firm that is useful to a wide range of potential users in making economic decisions". Consequently, the intention with regard to gathering accounting data is to provide information on the financial position and adaptability of the firm, and use this to form an image of the overall position of the firm and its actions.

[32] Accounting Standards Board in UK, 1989.

In this research the annual reports of the firms were used as the primary source of financial information, complemented in the US by filings to the SEC, the FERC and the local regulator. Often the split of revenues between businesses in the annual report were not given in sufficient detail in the US, and thus the SEC and FERC filings proved to be a valuable addition. In the European cases the accounting data obtained from the annual reports was sufficient for the purposes of this research.

My intention was to collect event data from as far as possible from the history of the firm preceding market opening, and coming as close as possible to the present day. In order to accomplish this, the key was to be able to list all the actions the firm had taken, what were the essential processes taking place in the functional environment of the firm, how the legislation was progressing, and what the competitors and new entrants were planning to do. To this end, I used publicly available data such as company press releases, newspaper articles, company histories, material used for the preparation of legislation, and regulatory filings, and complemented this with information obtained from the confirmatory interviews.

In the US, a rich source of event data was the regulatory case files that well documented the intentions of the companies, and the outcome approved by the regulator. Prior to the opening of the market for competition, the US utility firms were working under the strict scrutiny of both state and federal regulators. This procedure goes back in history to the early 1920s when the PUHCA[33] was passed; while regulatory scrutiny goes even further back in the history. For data on the period preceding the opening of the market for competition, the key source were the filings to SEC, FERC and the Maryland Public Service Commission. All the business issues were included in these filings, and thus they provided sufficient information to complement that issued through press releases on the actions the company was taking. In screening the data, slight changes in wording between the different annual filings could reveal changes in how the company sees its environment, and how the company formulates the internal discussion. In this regard the 10-K[34] document filed at the SEC was especially valuable. This document represents a comprehensive detailed annual report, including the management discussion regarding the status of different businesses with an assessment of the business risks and future development paths.

The electronic filings in SEC, FERC and in the Maryland Public Service Commission in general covered the history from the late 1980s or early 1990s. As, in general, the process of the market

[33] PUHCA = Public Utility Holding Company Act.
[34] The 10-K document is the Annual report that the listed companies are required to file at the SEC. It is more comprehensive than the official annual accounts published primarily for investors.

opening for competition had began in the late 1990s, the time span stretching out over a ten year was deemed sufficient. For the US firms these filings contain a detailed list of actions on a yearly basis. Constellation had been a regulated regional vertically integrated monopoly for almost a 100-year period and during this period all primary business decisions had to be approved by the Commission.

For the European case firms the history of the firms was presented in their respective annual reports and on web sites, and this provided the foundation for a presentation of the events as a "path to competition". The events contained in the company initiated history presentations could be expected to present the firm in a positive light and thus favor the firm. The firm data was complemented by that obtained through independent company histories, preparatory material used for legislatory purposes both at the EU level and at a national level, and case filings at the regulator.

A key source of recent company-initiated event data was press releases. The case firms provided detailed information of their activities in the form of press releases. Typically, the firms publish and make easily available press releases on all events that could have any public interest. Although there were differences in publicity legislation regarding listed firms in the EU and US, the firms were legally required to publish financial accounting information accurately, whether it was positive or discouraging for the market.

Obviously the press releases were not directly designed to be used as a source for analyzing event data. Sometimes the key information was scattered around various parts of web sites under different SBUs, while the corporate web site only contained financial information. Complementing press releases with data from recent complementary sources, such as the SEC, FERC and other regulatory filings data further enhanced the picture. Basing the event data only on press releases would inevitably have provided only a vague image of the true event structure, or even a distorted the picture.

A source of complementary secondary information was general articles about the case firms and the industry[35]. The information contained in these articles was, however, often reflecting the interpretations of the reporters, or reflecting directly the press releases provided by the firm, thus not providing any additional understanding.

[35] Electric Utilities Fortnightly, Financial Times, Wall Street Journal, Washington Post, Kauppalehti, Energia, Dagens Industri.

Confirmatory interviews within and outside the case firms were designed to triangulate the collected data, further explore the complex nature of interactions between the firm and the environment, and to enhance and deepen the information. To achieve this, representatives of the top management of all the case firms, the regulators and a large number of knowledgeable individuals (active and retired top executives, consultants, representatives of branch organizations, research institutions, regulators and trade representatives etc.) were interviewed. These sources are listed in Table 4-4 below. This strategy was especially important in order to deepen and enrich the view of the co-evolutionary paths of the firms. Originally the view was based on the event data, so the confirmatory interviews were an essential contribution to triangulation.

Structured interviews were used for these confirmatory interviews. For each of the main Research Questions a set of detailed discussion topics was prepared to anchor this empirical phase into existing literature. In this interview I chose to use open-ended questions, with the intention to promote free discussion, and thereby permitting the interviewee to inform his/her statement according to how the interviewee saw the reality from their own perspective. As interviews are irrevocable by nature, in order to capture all relevant information during the interviews the questionnaire was tested in advance at an electricity retail and distribution company, Porvoon Energia. This was for pilot purposes only and is not included in the final sample. The interviews were recorded to ensure full detailed composition of the answers. Not all interviewees, however, agreed to recording and data from such interviews were captured by using traditional documenting means (manual writing).

Source of confirmatory interviews	**Numbers of people interviewed and their respective firms**
Management representatives	US: Constellation (2), Exelon (1), Sempra (1) EU: Centrica (2), Fortum (1) Vattenfall (1)
Regulators	US: Federal Energy Regulatory Commission (3), Maryland Public Service Commission frequent multiple discussions and experience from participating in regulation in practice (over 10) EU: EU Commission (DG COMP and DG TREN) (2+3), Energiamarkkinavirasto[36], frequent multiple discussions and experience from participating in regulation in practice (over 10). Discussions with European energy regulators at the CEER (over 10).
Other authorities	US: US Department of Energy (1), US Department of Commerce (1) EU: VTT[37] (1)
Individuals with substantial industry expertise	Former and present CEOs and other representative of top management of energy companies, industry consultants and other industry experts, legislators, regulators, competition authorities (22)

Table 4-4 Confirmatory interviews summary.

The confirmatory interviews were divided into four categories. They were performed at the energy firms, where a representative or representatives of the top management was selected to be interviewed. Additional interviews were performed with regulators, other governmental officers, and with knowledgeable individuals deeply connected with the energy industry. The

[36] Energiamarkkinavirasto is the Finnish Energy Market Authority, i.e. energy market regulator.
[37] VTT was formerly known as The State Technical Research Center, but nowadays uses the name VTT.

interviewees from governmental offices and from the regulators were representatives of the mid / top management of the organizations.

Performing these interviews was rewarding, because the extent of the insights and information obtainable through only this means was substantial. The prior knowledge of the industry, and the network within the industry enabled me to get access to the top leaders of the industry, thus contributing to the completion of the research. Later during my work at the Maryland Public Service Commission and at the Energiamarkkinavirasto, I used the opportunity to deepen my understanding of the regulatory process and the interaction between the regulator and the firm. The information thus provided cannot be obtained through any official channels.

4.4 ANALYSIS

The data gathered represent all key aspects of company activities before, and immediately after the market opening for competition. The naturally emerging question is then concerning, how this data can technically be used to produce information on both the overall development within the firm, and the interaction with the environment, at the market opening.

Woo and Willard (1983) identify four primary dimensions covering most common financial and operational facets of business performance; profitability / cash flow, relative market position, change in profitability and cash flow, and revenue growth. Venkatraman and Ramajunam (1985) cautioned that indicators such as sales growth, net income growth and ROI should not be combined to form one composite dimension, because they seem to reflect distinct dimensions. These measures would multiply the position of profitability, as they are in fact calculated based on the same data.

Of these listed indicators I selected to calculate primarily profit margin, ROE and ROCE. Despite the obvious benefits of EVA or EP, I chose not to use them because calculating them would require the standardization of calculus and accounting procedures across the case firms to ensure comparability of the results. This could thus easily lead to a discussion on the differences in the cost of capital, differences in the nature of the business and bias derived from the regulatory tradition, the differences in administrative traditions, the role of regulated businesses or the role of regulator in the overall business control, et cetera.

The figures obtained from primary[38] and secondary sources were taken at face value; i.e. I did not try to adjust the accounting-based figures to correct for the possible impact of differences in accounting standards or practices. Similarly the SBU structures of businesses given by the firms were taken at face value; i.e. I did not try to change the indicated business structures to facilitate following the development of certain individual businesses. Many of the case firms had changed their operative structure during the observation period, thus making it challenging to follow one individual business. Following the development of, say the distribution business would have required reconfiguring the accounts to facilitate this. Besides, all firms seem to change their reporting structures periodically. Trying to restructure the accounts in order to create consistency over the entire observation period could lead to bias resulting from interpretations and would not correspondingly improve the value of the results. This again reflected the viewpoint of an investor; the investor has to take the company as a whole, and not to try to split it into parts.

As the firms in this research operated using different currencies, I primarily used the accounting currency of each company. This meant that for Vattenfall, the currency was Swedish Krona, and for Centrica the British Pound, and for Fortum the Euro. For Constellation the obvious currency is the US Dollar. The indices were thus calculated using the accounting currency. When monetary comparison was required the different currencies were converted to USD using the exchange rate on the date making the conversion. This date was documented.

The processing of accounting data begun by calculating several accounting-based ratios and indices, in case they were not originally provided in the primary sources. The intention was to process the collected data so that it would support the process of theory formation by revealing certain trends based on the data. The following indices were calculated:

- Business Diversity Index BDI[39],
- Corporate Turnaround Index CTI[40],
- Capital employed, calculated as equity plus interest bearing debt given in the financial statements,
- Return on Capital Employed, ROCE,
- Return on Equity, ROE, with equity as indicated in financial statements,

[38] Primary sources refers to the companies themselves; secondary sources refers to external sources.
[39] See Appendix B.
[40] See Appendix B.

- Return on Assets, ROA, Assets as indicated in financial statements and
- Profit margin, calculated as Net Profit over Net Sales.

When calculating the profit margin I used the net operating profit indicated in the financial annual report as a proxy for EBIT, and the group net sales. Similarly, when calculating the financial performance, ROE, ROCE or ROA, the Net profit was used. This was done for simplicity, because opening the accounting to possible corrections would have not been possible, primarily due to differences in accounting standards and practices. This naturally causes a certain degree of error in the results, but due to the use of logarithms in calculating the CTI, the error is somewhat diluted. Net Profit was then divided by Equity, Assets or Capital Employed to calculate the corresponding ratios. Financial strength is calculated so that equity over assets reflects the overall financial leverage of the company, while gearing reflects the indebtedness of the firm.

For the purposes of this research I used Total Assets and Equity as they appeared on the Balance sheet. Capital employed was herein defined as Equity added to the amount of interest-bearing debt. Primarily due to the differences in accounting standards and practices, the figures provided in annual reports and calculated at this research were not necessarily the same, which is a possible source of error. In order to obtain consistency, I used the calculated figures, although the figures would have been provided in the annual report.

To illustrate the diversification of the firm, I developed a Business Diversity Index. Similarly, to illustrate the rate of change the firm had experienced, I developed a Corporate Turnaround Index (CTI). The formulae for calculating the Business Diversity Index and the Corporate Turnaround Index are presented in Appendix B.

In order to create a view of the longer-term development of the firm and the regulatory / business environment in the beginning of 1990s and early 2000s, I assembled a verbal description of the state of the firm and the operative environment during these decades. To obtain more in-depth understanding of the longer-term influence of the interaction between the firm and the environment, I presented snapshots of the firm environment over a longer time frame. The intention was to establish a longer-term path of the development of the firm and the prevailing market conditions.

During the time prior leading to the market opening for competition, the firms were consciously, or without any specific end, preparing themselves for forthcoming competition. There were clear signals of the forthcoming competition in the international discussions in the industry and in the business environment of the firms. The inevitability that the markets would be made competitive should not have been a surprise. The actions the firms took constituted a path of actions by the management of the company, either purposefully taking the steps towards a recognized goal or just by drifting. The actions taking place in the immediate environment of the company provided signals of the forthcoming change to the company, and thus the company had the opportunity to react to these signals. I tried to categorize the company-initiated events vis-à-vis the forthcoming market opening by categorizing the actions on two dimensions, company-initiated – regulator-initiated, and home market – new market. In this respect the new market could mean new market in a geographical sense or as a new product market (Ansoff, 1957). As a path to the market opening I present these events as a sequence representing the function of time.

Owing to the differences in sources, the collected event data obviously had very dissimilar characteristics. Data from annual reports, press releases and confirmatory interviews did not naturally fall into place and form a congruent set of events ready to be used for theory generation. The same applied to the actions taken by the regulators, legislators and customers. The timing information related to events was sometimes especially difficult to identify, and thus constituted an obstacle in creating a sequence of events. However, the interviews proved helpful in this respect, particularly for assisting me to place the various events on one time axis.

Pajunen (2004) calls the purpose of this historiography, a means to provide a realistic and verifiable knowledge of historical process, and Pajunen (2004) further describes the purpose of historical research as to "*establish verifiable and true representations of past reality*".

Event structure analysis (Heise, 1989) is a methodology that combines various characteristics relating to processes into internally logical entities that might otherwise be impenetrable to the uninformed. Heise (1991) discusses dealing with recorded incidents so that an analyst first defines events, then defines logical relationships among the events, and subsequently defines how each event enables and expends other events. The result is a grammar of action accounting for recorded incidents, and this model can be displayed graphically, employed for simulations, and compared with related grammars for purposes of contrast or generalization.

In this research I followed the procedure used by Pajunen (2004), and attempted to put all the company and environment-initiated action events into a sequence and present them in a narrative form. Pajunen (2004) discusses the approximate nature of the narratives produced by the researcher using the incomplete information available for that researcher to describe the events taking place in the case firms. The researcher has, anyway, to base the analysis on the information that is available, on verbalized renditions of events (Heise 1991), and not on the information that could be out there but we are not aware of. Heise (1991) further points out that the reality constraints that are semantically embedded should be presented so that other culture experts can readily comprehend how the events are inherently structured.

Heise (1989) describes the process of preparing a series of events into a sequence so that informants relate and interpret incidents in which a computer could be used to assist their interpretations within a theoretical framework. Heise suggests that a software product could be used in this context. Event Structure Analysis (ESA) is a qualitative methodology for understanding sequential events. A prerequisite is that the events can be connected logically and this connection can be understood properly. Computer software that is available for (ESA) is known as Ethno software (Heise, 1987) and is available as a downloadable version from Indiana University[41]. As an end product the software produces a picture linking all the events, and in order to obtain this picture the researcher has to understand the linking of all events and to answer multiple questions asked by the program. In this regard it is necessary to input all the events into the program and answer questions, which thus define the inter-linkages between all the events. The program may be used as a grammar explaining the sequence of events. The analysis shows how observed events are interlinked with other elements.

After the press releases of the chosen case firms had been collected and complemented by the event data from the additional sources, the screening of the events begun by assessing which events did not have value for this research. In some firms the press releases were obtained from various sites on the corporate web site, because some firms had distributed releases about the different SBUs activities under these SBUs own web sites. By doing so they had focused only on financial information on the corporate main web site. The way in which the firms formulated press releases regarding unpleasant events could, however, bias the data. Sometimes the complementary information from other sources could justify the inclusion of press releases while excluding others. These press releases were analyzed from as long a period of time preceding market opening as possible, to as close as possible to the present time.

[41] http://www.indiana.edu/~socpsy/ESA/ethno.html.

The information obtained from the press releases and other sources such as filing information, company history and industry publications, and information obtained from the confirmatory interviews was then sequenced so that all events could be placed on one time scale. This information was then used to produce a historical time line for each case firm, thus constituting a skeleton for the history of each of the case firms and complemented with the flesh and blood of the historical narrative. This was sometimes difficult because the various sources were often not very precise on the occurrence of the event and therefore timing multiple events from multiple parallel sources required very careful judgment. When the historical narrative was prepared I screened this narrative for important single events, removed events without significance and possible duplicates, and gave important events a variable name that could be later used as an input for the Ethno software (see Appendix C). These variable names were selected so that the name would be unique, but would have an understandable connection to the full concept of the variable. The event names are not, however, necessarily unique for all case firms. Before being able to begin feeding the variables into the software the causal relationships between the various variables had to be established. For some events this was relatively straightforward, but for multiple events taking place simultaneously but eventually impacting each other this was somewhat more challenging. If a firm and the regulator take action at the same time, the cause and effect can be arbitrarily defined either way. These variables were subsequently fed into the Ethno software while their linkages to all other variables were defined through answering questions presented by the program. The program produced a linkages picture illustrating the causal and temporal sequence of the events. Although the vertical axis illustrated in the picture represents time but the axis is non-linear, I chose not to present the years in the axis as tick marks.

The press releases included duplicates (the same event is publicized in several press releases or information related to the same event was extracted from different sources), information on the timing of the forthcoming publication of annual financial results, announcements of power outages and subsequent repairs of these outages, announcements of new signed power supply contracts, or any other events that are part of the daily normal operations of the firms. Obtaining new customers has no relevance regarding this research, publishing annual results is an integral part of the business of the firm, and information of a technical nature does not have strategic significance and thus of no interest for the research. An extreme example of an event that was

not included was the announcement by Constellation that they would keep the offices open on the day following the terrorist attacks on September 11, 2001.

To describe the interaction of the firm with its environment, several categories of action emerged from the data. These categories, listed below, seemed to be symmetrical for all case firms, although their relative position within a firm and within a certain regulatory framework naturally varied. These categories emphasize strategic nature of the interaction between the organization and its environment with specific emphasis on the actions the company takes. The final item, donations, was included because they often shaped the relationship of the firm with its environment, especially in the US where they are used as an essential instrument in conducting political strategies.

The actions fell naturally into the following categories:

1) acquisitions,
2) investments,
3) finance actions,
4) strategy / organization changes,
5) nominations,
6) regulatory actions,
7) accreditations and
8) donations.

Whether internally or externally initiated and oriented primarily towards internal world or the external environment of the firm, the essential events could be further organized into four major groups. The first is characterized by company-initiated events that interact with the environment. For example, investments and acquisitions, and divestments, that are intended to improve the company's ability to sustain, and donations to benevolent organizations or other organizations that will have on impact on the microenvironment surrounding the firm. The second group can be characterized as company-initiated internal actions intended to shape the company in order to better face environmental variation. Example are nominations of people to key management positions, and organizational and strategy changes. The third group of actions is intended to alter the climate surrounding the company. This primarily consists of regulatory action. The fourth major group of events reflects the position of the company in its business environment. This is

measured as accreditations in the business community. These categories are presented in Figure 4-2 below.

Figure 4-2 Categorization of firm actions.

5 CASES

The purpose of this chapter is to present the cases and their primary characteristics. I present the events that depict the behavior of the case firms at the time of opening the markets for competition. I illustrate the interaction between the companies and their relevant environments before, at and after the markets relevant for the company in question were made competitive. For every firm I present a review of the organizational context and performance, a historical narrative, and subsequently illustrate the sequence of events as an ESA picture.

5.1 CONSTELLATION ENERGY

5.1.1 Organizational context and performance

Constellation Energy was a Baltimore; Maryland based company incorporated in 1995, whose roots go back almost two centuries to the very beginning of the US energy infrastructure industry. The configuration of Constellation at the time the study commenced could be regarded a result of the development of regulatory framework at both the federal and state level.

Towards the end of the analysis period Constellation pursued a two-way strategy. First they intended to benefit from the opportunities offered by the wholesale interstate markets all over the United States. At this time the local regulated distributor and retailer; BGE[42] operated gas and electricity distribution networks in the city of Baltimore and provided Standard Offer Service (SOS) for those electric commercial, industrial and residential customers that did not select

[42] BGE = Baltimore Gas and Electric.

competitive suppliers. For gas customers BGE had to maintain sufficient capacity to serve the POLR (Provider Of Last Resort) obligations[43].

The operation of both owned and operated merchant generating plants all over the US was complemented by marketing and risk management operations, electricity retail and a consulting services. Constellation was one of the largest competitive electricity suppliers to large commercial and industrial customers, and one of the nation's largest wholesale power sellers. Towards the end of the analysis period, the total generating capacity controlled by Constellation Energy was about 12 500 MW.

The Maryland base rates for residential, commercial and industrial customers were capped until June 2006, and the lifting of the rate cap resulted, in theory, by the introduction of competition in the retail business of BGE. Due to the long rate freeze and the substantial increases in fuel cost caused by natural disasters, the price of electricity was expected to rise on the first day after the price cap was removed. This did not, however, cause a wave of competition in the retail market.

Constellation Energy enjoyed a good reputation in the industry. As an indication of this the company was ranked as number one among utilities in the 2005 BusinessWeek annual evaluation of best performing firms on the Standard & Poor's 500 stock index.

Towards the end of the observation period, the competitive wholesale function constituted a majority of the business base of the company. This function had been developed since the mid 1990s; before the mid 1990s there was practically no wholesale function in the company. Developing such a major business function could tie in substantial resources such as management attention, HR, and most of all, capital. In 2006 Constellation announced its intention to merge with FPL, formerly Florida Power and Light; the new company would integrate the activities of both firms but have the name Constellation. This merger, however did not obtain regulatory approval, and was followed in summer 2008 by a proposed merger scheme with MidAmerican Energy Holdings Company and yet another competing merger scheme with the French company EdF. These merger schemes could be interpreted as a reaction to the rapid growth in the Constellation business base and the subsequent financial constraints.

Table 5-1 below illustrates the development of financial characteristics of Constellation for the period 1998 – 2004. There was a rapid growth of the share of competitive wholesale business for

[43] The local distributor had POLR obligations vis-à-vis the end consumers, so that all customers had a back-up supplier of energy commodity. This was often done by the distributor in case the competitive suppliers failed to do so.

Constellation, while the share of other businesses did not grow at a similar pace. Prior to 1998 the revenues were regulated and the real growth primarily depended on the growth in the local customer base, the energy intensity and the price of the commodity. The financial performance of the company collapsed in 2001 as a result of the intense investment program started in the late 1990s but regained momentum in 2002.

	1998	1999	2000	2001	2002	2003	2004
Revenues MUSD	3386,4	3830,9	3774,4	3878,8	4718,6	9687,8	12549
Net Income MUSD	305,9	260,1	345,3	90,9	525,6	277,3	539,7
Total capitalization MUSD	6314	5878,1	6621	6847,8	8771,5	9483,1	9821
Equity MUSD	2995,9	3017,5	3174	3843,6	3862,3	4183,1	4726,9
Total assets MUSD	9434,1	10011,4	13248,1	14697,5	14943,3	15800,7	17347,1
Equity over assets	31,76 %	30,14 %	23,96 %	26,15 %	25,85 %	26,47 %	27,25 %
Gearing	214,90 %	231,78 %	317,39 %	282,39 %	286,90 %	277,73 %	266,99 %
Net Income over Revenues	9,03 %	6,79 %	9,15 %	2,34 %	11,14 %	2,86 %	4,30 %
Business Diversity Index	0,55	0,57	0,77	0,91	1,16	0,38	0,28
ROE %	10,21 %	8,62 %	10,88 %	2,36 %	13,61 %	6,63 %	11,42 %
ROA %	3,24 %	2,60 %	2,61 %	0,62 %	3,52 %	1,75 %	3,11 %
ROCE %	4,84 %	4,42 %	5,22 %	1,33 %	5,99 %	2,92 %	5,50 %

Table 5-1 Financial and BDI characteristics Constellation Energy 1998 – 2004.

The BDI development clearly indicates that from 1998 until 2002 the business portfolio became more balanced. Since then one business stream, the competitive wholesale began to dominate.

The reflection of the intensive investment program can be seen in the rise of total assets from 1999 to 2000 and 2001. The investment program in the late 1990s did not, however, yield a revenue stream before 2002 – 2003, which obviously had an impact on the financial performance especially in 2001.

In calculating the financial performance, the net profit was divided by equity, assets or capital employed. Financial strength was calculated so, that equity over assets reflects the overall financial leverage of the company, while gearing reflects the indebtedness.

5.1.2 Historical narrative

From the early 1900s up to the 1990s the company operated in a static business environment characterized by a vertically integrated local monopoly, rate regulation and the almost complete absence of competition. Thus, of the almost 200 years that the company had existed, the changes initiated in the early 1990s that continued up to early 2000s were more dramatic than the primarily technologically derived changes the company had seen before. Despite the restructuring of BGE in 1999 and the fact that BGE had sold its generation assets and concentrated on regulated distribution, in the eyes of the local clientele the perceived profile of the company remained unchanged. This was not moderated by the fact that the generation assets were transferred to the parent company of BGE, i.e. Constellation.

From the early times of the Baltimore utility, until the late 1990s BGE could be regarded as a very typical representative of its kind. In the electricity business BGE covered the business chain from generation, transmission and distribution to the marketing of electricity. To regulate the public utilities and transportation firms doing business in Maryland, in 1910 the Maryland General Assembly established the Public Service Commission (PSC) as an independent state agency. A regulated monopoly can have all of its used and useful operational expenses covered through its rates, so initiating rate cases regularly at the Commission was of vital importance.

Prior to the introduction of competition, the primary risks associated with the activity originated from the operational risks associated with adjusting the generation assets to the client base, possible operational and storm damage-related risks, and coping with the overall technical development in the business environment. The credit risks, or interest risks, associated with collapsing credit rating were not a major risk because the risks associated with this industry were low. The product market was constant and the Commission was the body to which approval for all major business decisions had to be applied.

In 1992 the US Congress passed the National Energy Policy Act (**NEPA**) that effectively gave states the option of deregulating their electricity supply markets. The law also mandated that the Federal Energy Regulatory Commission (FERC) open up the national electricity transmission system to wholesale suppliers on a case-by-case basis[44]. As a consequence, the legislation broke the regional utilities' generation monopoly by allowing independent power producers to gain

[44] http://www.eia.doe.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/enrgypolicy.html November 29, 2008.

access to transmission lines, thus enabling them to sell generated electricity[45]. Similar intentions had been shown in passing the PURPA in late 1970s, but it did not have such a deregulatory flavor.

Table 5-2 provides an illustrative snapshot of the firm and its prevailing environment in the early 1990s and early 2000s. The key attributes characterizing the firm and the market environment are presented in the following tables, 5-2 and 5-3. The next table, Table 5-3, illustrates the key characteristics of the competitive environment proceeding opening of the markets for competition.

Constellation / BGE	**Early 1990s**	**Early 2000s**
Primary company	BGE	Constellation
Power procurement, own generation, purchases	Own generation, balancing with PJM	Power procurement by contract (BGE), Generation business (Const)
Customer base	Baltimore residents	Wholesale customers in US, Baltimore residents
Coverage of business chain	Regulated vertically integrated regional monopoly	Generation, trading & RM, distribution, POLR service[46]
Primary origin of growth	Organic growth	Competitive wholesale markets in entire US
Key risks in business model	Availability of gen. assets, major storms, customer risk to small extent	Regulatory risk, customer risk, market risk
Key Strategic challenges	To build the infrastructure, foresee the forthcoming regulatory changes	Find new markets to be opened, management of risks and finance of multiple projects
Diversification characteristics	One regional integrated business	Unbundled business chain, functional SBU:s

Table 5-2 Characteristics of Constellation / BGE in 1990s and 2000s.

[45] Accenture Case Study. Constellation Energy: Creating a Winning Mindset by Robert Thomas.
[46] POLR Provider of Last Resort, default supplier.

The characteristics of the competitive environment in 1990s and 2000s are presented in Table 5-3, which aims to show the changes in the key attributes of the market and their changes.

	Early 1990s	**Early 2000s**
Key characteristics of market	Vertically integrated monopoly markets	Generation unbundled, competitive wholesale, retail price caps
Competition in the market	No	In generation, wholesale and retail (partially)
Form of transactions	Static conditions, rate base regulation, guaranteed return	Competitive wholesale, price caps hinder retail market development
Degree of market integration	High	Semi
Relationship between actors	Arms length	Competitive wholesale, no real retail competition
Cause of imperfect competition	Legislative; distribution, retail and generation under one integrated company	In retail price caps, SOS supply arrangement

Table 5-3 Characteristics of Constellation / BGE markets in 1990s and 2000s.

The passing of the National Energy Policy Act of 1992 encouraged multiple requests by BGE[47] (**BGEREQ**) to the Commission to permit it to set up a holding company that would allow it to enter competitive markets. This ultimately resulted in the Maryland Senate passing the restructuring legislation in 1999, as House Bill 703 and Senate Bill 300 (**HB 703, SB 300**) that created the overall foundation on which competition could emerge. However, some details of how the implementation was carried out, such as the scheme for covering the stranded costs in conjunction with setting of price caps for the residential markets while simultaneously cutting the price, made it difficult for competition to emerge in practice.

[47] Accenture Case Study. Constellation Energy: Creating a Winning Mindset by Robert Thomas.

The BGE filed rate cases in the Maryland Public Service Commission regarding both electricity and gas in (e for electricity and g for gas), 1988e, 1990e, 1995g, 1995e, 1997g, 1999g and 1999e. However, after passing the 1992 national law, and as a signal of the approaching market opening in 1993, the commission initiated an investigation of the allocation of costs relating to regulated and unregulated business activities within the company **ING1993**. In **MDBOU1993** the regional boundaries for electric utilities service areas in the State of Maryland were established. In **ING1993** and **ING1994** the commission initiated an investigation of the promotional practices of BGE and their tariff structure. In **ING1995** the Commission initiated an inquiry on the framework for gas business deregulation. Likewise in **MKTr1995** BGE applied for a transition to market-based rates in its gas business. In addition, BGE placed gas procurement with a subsidiary (**GASORG**). In **CTAR1995** the Commission set targets for the generation business. Constellation was (**CONST)** founded in 1995 with a strategy to incorporate the non-regulated businesses and benefit from the opportunities opening in the competitive market.

Throughout the 1990s **ENRON** was the driving force trying to persuade both the Federal Government and the various states in trying to open the energy markets for competition[48]. ENRON was a company that was founded on the idea of competitive energy markets and thus used substantial resources in trying to achieve this goal. ENRON was active in Maryland, trying to persuade the local legislator to introduce a competitive legislative framework.

On April 24, 1996 the FERC issued Order No. 888 **FERC888** "Open Access Transmission Order" which set the standard for rules regarding access to the network for the generators and required transmission line owners to offer access to the grid at prices comparable to those they charge to themselves.

Later in 1996 (**ING1996)** the Commission initiated an inquiry into the provision and regulation of electric service. In December 1996 (**INGa1996)** the Commission initiated an inquiry of the company's practices under certain tariffs regarding customer enrolment practices. This was followed in 1997 (**ING1997)** by an inquiry on the standards of conduct. In April 1997 (**FIL1997)** the company finally filed the application to merge. This merger was then put into place in 1999 through a share exchange.

The foundation was laid that enabled the opening of the electricity market for competition by passing, in April 1997, Senate Bill 851 (**SB 851**), which created a task force on electric industry

[48] Multiple discussions at Maryland PSC.

restructuring that was scheduled to issue a report by December 1997[49]. In December 1997 Maryland PSC issued Order 8738 (**CO8738**) establishing a framework for the restructuring of the electric power industry. The plan set a schedule for restructuring so that a third of the state's consumers would have retail access by July 2000, another third by July 2001 and the entire state by July 2002.

The Commission had a role as an advisor to the governor, the state senate and house. The Commission being politically nominated by the governor kept continual contact with the governor and the state parliament, especially during the legislative sessions at the beginning of each calendar year.

In January 1998 the Commission set performance targets for BGE generation activity (**CPERF1998**). This was then later followed by an application from BGE to recover stranded cost (**BGESTRC**). In September 1998 (**OPC1998**) the Office of the People's Counsel, as an advocate of the consumer groups, requested the reduction of retail rates. In the 1998 Settlement agreement, the Maryland utilities (including BGE) OPC and the Commission agreed on a dual phase market opening incorporating all the actions into one package (**SETL1998**). In this package there was an agreement on the recovery of stranded cost, the rate freeze, and agreement on the transitional periods. Besides these, the agreement contained several confidential elements.

In January 1999 House Bill 3 (**HB 3**) and Senate Bill 65 (**SB 65**) allowed BGE to form a holding company. The law was intended to make it easier for BGE to enter into new business ventures in a competitive market.

In April 1999, with House Bill 703 (**HB 703**) and Senate Bill 300 (**SB 300**), the "Maryland Customer Choice and Competition Act," restructuring legislation was enacted. The legislation included at least a 3 per cent rate reduction for residential consumers, funding for low-income programs, disclosure of fuel sources by electric suppliers, recovery of stranded costs through a non bypassable wires charge, and a 3-year phase-in for competition beginning in July 2000 and becoming complete by July 2002. As of July 1, 2000, all customers of electricity firms had the opportunity to choose their suppliers. All industrial and commercial customers were given the choice of their supplier on January 1, 2001. The firms were obligated to serve a customer who did not choose to select a competitive supplier but chose to remain with the electricity supplied

[49] Maryland General Assembly.

by the distributing electric company under Standard Offer Service. This Act required that all customers receive a rate reduction followed by a rate freeze.

The restructuring legislation prompted Maryland utilities to revise their restructuring proposals. BGE submitted its new plan to the PSC. Thus, in July 1999 Baltimore Gas & Electric filed a proposed restructuring plan with the PSC (**RESTRPLAN**). The plan included the required 6.5 per cent rate decrease over six years for residential customers, $528 million for stranded costs, a six year rate freeze and the phasing out of transition costs, and customer choice beginning by July 1, 2000. The rates would be unbundled and generation assets transferred to an affiliate company while BGE would provide the initial funding of a low-income assistance fund and act as default supplier (POLR) for customers deciding not to switch suppliers.

This rate freeze, set to last until 2006, froze the rates to such a level that as a probable unintended consequence the competitive suppliers had lost their competitiveness in the BGE market area. The intended introduction of competition in the BGE market area was thus delayed at least until the expiry of the rate freeze.

On December 20, 1999 FERC issued Order 2000 (**FERC2000**), its final rule on regional transmission organizations (RTOs). This order was intended to begin the process of setting criteria for new, regional transmission organizations (RTOs) to maintain reliability, avoid congestion, coordinate power flow among different regions, and plan new transmission construction and upgrades.

Subsequent to the 1999 legislation, in March 2000 the generation assets of BGE were transferred to Constellation at book value (**GENTRANS**). After this transaction, due to the congested transmission system, Constellation was primarily in charge of the electricity supply to the regulated distribution business in the city of Baltimore. Due to the sourcing regulations, part of the electricity demand was sourced from competitive sources after competitive auctioning. Constellation, however, supplied most of the power requirements of BGE.

Donations, especially to United Way[50] seemed to be a constant agenda item for Constellation. This could be interpreted to be a form of a corporate citizenship program where the company was trying to improve its profile among the local clientele and to prepare the ground more favorable in the forthcoming changes in the regulatory framework.

[50] United Way is an organization dedicated to support building a stronger America by mobilizing the communities to improve people's lives.

Throughout the observation period the share of residential customers switching supplier was negligible. However, it has to be pointed out, that this was the case only among residential customers while the larger industrial customers typically did use the opportunity to switch supplier[51]. The primarily commercial and industrial customer switching is indicated as **COMPSWITCH**.

The year 2000 included the **IPO** of Constellation; the trading began on the NYSE on May 3rd. Acquisition of power generation assets included assets in New York. Similar actions were the investment in Wolf Hills Energy, Chicago, University Park Energy, Illinois Power Plant, Seguin, and the acquisition of Nine Mile Point generation share.

At an organizational level, on October 23rd it was announced that the CEG's[52] merchant energy business was to be separated from retail services business (**SEPAR**). Except for the separation of merchant and retail businesses, there were no further major nominations.

The company promoted deregulation and customer choice by several actions. Donations, specifically to United Way (**UWDON**), were constantly on the agenda.

The strategy implementation of the company could be seen in the investment decisions and the acquisition of generation assets. This was an indication of the strategic orientation of the firm towards building up a strong position in the generation market on a national basis. The number of donations indicated involvement in political activity, which could be interpreted as an attempt to soften the political pressures towards the company on the local environment, especially among the OPC. Financially, the year 2000 represented investments and increased indebtedness as the investments were primarily financed by debt.

The beginning of 2001 was characterized by continued investments in different competitive power generation projects, with the raising of the required capital to accommodate these; investments had already begun in 2000. Financially 2001 was not a good year. Profitability collapsed to 2,3 per cent as the development of new plants did not yet provide additional revenues but rather, consumed a substantial amount of funds. This resulted in financial problems (**FINPR**).

In April the plan to divide the company into a merchant company and a generation company was made public.

[51] Monthly customer switching statistics provided by Maryland PSC.
[52] Constellation Energy Generation.

At the beginning of 2001 the company saw moderate organizational changes. This was, however, altered in October by the nomination of Mayo A. Shattuck as the president and **CEO**. At the same date the plan previously announced to separate the unregulated merchant energy company through a spin-off to shareholders was cancelled. There were no further investment or acquisition decisions taken in 2001.

As the new CEO had come into energy business from banking world, he brought along the use of innovative financing tools to finance the power generation projects that have subsequently paved the way to substantial company growth. This new way of financing generation projects required careful risk assessment of the projects, combined with proper coverage of all the relevant associated risk positions.

When nominated, Shattuck gave the following comment: "When I got here I found a poor infrastructure, a siloed organization, misguided management, no visibility into our cultural values, and no competitive business targeting a market that was about to open.… We knew we had to make rapid-fire decisions to first stop the sinking ship, and then to right it."[53]

The new CEO quickly changed the strategy and the organizational shape of the firm (**NEWSTRAT**, **NEWORG**).

A detail worth noting is a press release from September 11th, whereby the company announced that the offices would be kept open on the following day.

The revenues of Constellation Energy grew steadily from 1998 to 2004. However, in 2002 there was a shift to an accelerating growth rate because the consistent stream of new buildings began generating additional revenues in 2002, thus improving the financial situation of the company (**FINIMP**). For 2002 the net income over revenues grew to 11,1 per cent.

While the share of competitive wholesale had been rising substantially, this had at the same time reduced the BDI (see appendix B) of Constellation because so much of the revenues were dominated by the Wholesale competitive. From 2000 to 2002 the BDI grew, indicating an increase in the business diversity of Constellation.

The year 2002 was characterized by a continuous wave of nominations (**NOM**), including the nomination of Mr. Shattuck as the chairman to replace Mr. Poindexter.

Though the customer choice program was intended to be complete by July 2002, no significant changes in customer switching was observed.

[53] Accenture Case Study. Constellation Energy: Creating a Winning Mindset by Robert Thomas.

The beginning of 2003 marked a continuation of the investment wave. This was later complemented by a number of nominations and accreditations. In the fall of 2003 there were two natural phenomena that had substantial impact on the industry in general and on the company; the great "North-eastern black-out" in August, followed by the damage caused by hurricane Isabel.

In 2003 the profitability collapsed to 2,8 per cent as the share of competitive wholesale in the revenue stream increased threefold, while the margin contribution of this business was substantially less than typical for the businesses in the portfolio. In 2003 the net income over revenues was at a similar level to 1999, while revenues had almost three doubled.

In 2003 and 2004, however, the BDI declined to a level lower than at the times prior to market deregulation. This is an indication of increased dominance of one business area, i.e. competitive wholesale.

In April 2004 the Maryland Senate passed Senate Bill 285 (**SB 285**) that required electric firms in Maryland to conduct a study tracking shifts in generation and emissions as a result of the restructuring the electric industry.

In January 2005, BGE and other transmission owners filed a joint application at FERC to have network transmission rates established through a formula that tracks costs instead of through fixed rates in accordance with FERC guidelines (**BGEFERC**). The formula approach would have taken effect in June 2005, and transmission rates would accordingly be adjusted in June of each year based on the formula without the need for another transmission rate filing.

Prior to the introduction of the Energy Policy Act of 2005 (**EPA2005**), the development opportunities for the regulated distribution business were restricted by the physical boundaries of the activity and the overall growth in demand within the territory. The new legislation would change this, as the distribution functions no longer needed to be geographically connected to each other.

The rapid expansion to competitive wholesale, including the required investments, can be seen on the chart illustrating the financial situation of the company. The total assets have more than doubled since before the deregulation, and the increase in assets appear to have been financed by short-term debt and other short-term liabilities, as the total capitalization has not increased correspondingly. Based on the observations from the 10K report submitted to the SEC on March 11, 2005 and the financial statements of December 31st 2004, the Balance Sheet contained

current liabilities worth USD 7.5 billion. Of the total assets of USD 17.3 billion, this was a substantial portion. In 2004 profitability was an unsatisfactory 4,3 per cent.

The major hurricanes Katrina and Rita in the fall of 2005 caused a rapid rise in the prices of natural gas, followed by a rapid rise in the power market prices. As the rate freeze was determined to expire in July 2006, there was a general anticipation of a substantial price shock for the retail prices of electricity. The expected rate increases caused an intense political debate, which resulted in an arrangement that *de-facto* postponed the rate increases by a year (**Expected price increases**).

Throughout the observation period the general public, i.e. the customers of BGE were in continuous contact with politicians through direct contacts and through writings in the media, primarily the local newspaper, the Baltimore Sun. At that time the individual whom would later be elected as the new governor of Maryland in the 2006 elections, Martin O'Malley, was the mayor of the city of Baltimore. Turning the energy issue into the election theme supported his election efforts and ultimately gave him access to the Maryland governors' mansion.

In November 2006 the gubernatorial elections were strongly characterized by energy issues. The forthcoming lifting of the rate freeze and the anticipated increases in the electric rates helped Martin O'Malley to win the elections primarily using energy as his election theme. (**ELECT06**). The obvious outcome of the political process was more strict Commission policy and subsequently proposed changes in the competitiveness of the retail energy market.

The failed market competitiveness arrangement in California had an impact on the public discourse in Maryland throughout the 2000s. Opponents of competitive markets primarily used this as a model showing how a competitive market is a one-way street to disaster. This in combination with the expected retail price increases and the election of new governor with subsequent nomination of very political commission there were strong expectations of forthcoming changes in the regulatory framework applied in Maryland.

5.1.3 ESA of Constellation Energy

Figure 5-1 illustrates all of the most important events vis-à-vis the market opening for the Constellation Energy and its operative environment. I have presented the events using the "swim-lane" presentation often used in process management to emphasize the role of the initiator and the primary target of the action.

The initial events setting into motion the market opening in Maryland could be traced back to the passing of the NEPA 1992. The role of ENRON in the structural changes in the energy market in Maryland was essentially active. What, if any was then the role of ENRON in the preparation of the NEPA would be a theme for another study. The initial phase in Maryland lasted until the settlement of 1998, while the passing of House Bill 703 and Senate Bill 300 in 1999, fundamentally put into motion the irrevocable process that ended in the transfer of the generation assets from BGE to Constellation, and the IPO of Constellation. In the early phases of market opening, the initiator, setting the process in motion, was the legislator, but the primary action mainly took place between the regulator and the company, thus fundamentally forming the opportunities for the firm to conduct business.

The impact of the US two-tier regulatory system can well be seen in the Constellation case. The federal level policy impact was represented first in the passing of the NEPA92 and subsequently in the rulings of FERC with resultant primary impacts on the interstate wholesale trade and transmission of electricity. The state regulatory policies were, to a certain extent, derived from federal policies, such as passing of the restructuring legislation in 1999, which followed the pattern set in the NEPA92. The state regulatory policies fundamentally set the framework for company action within the state. Thus, the federal and state regulatory policies would not, in theory, overlap, but they did have some interdependence.

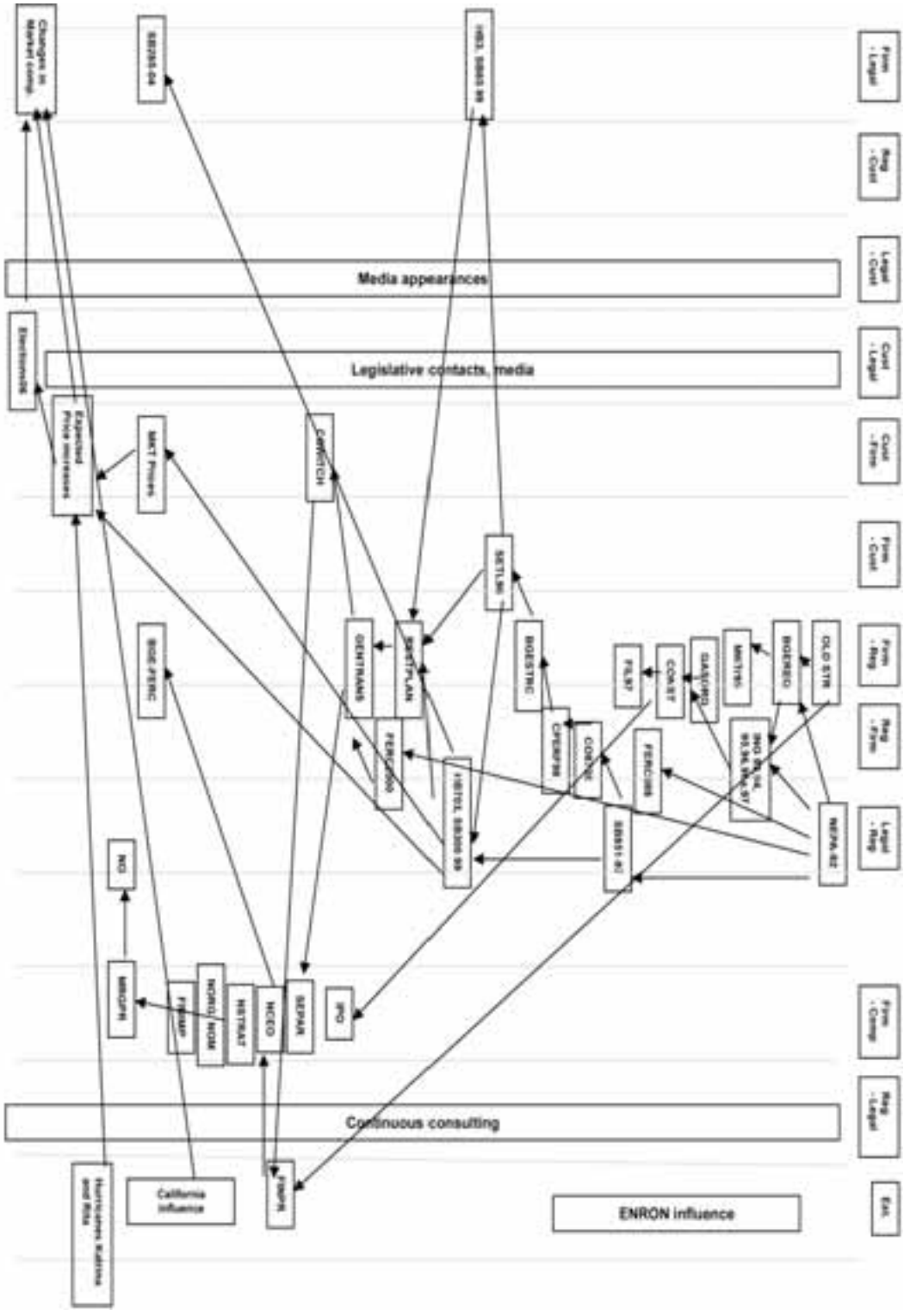

Figure 5-1 ESA of Constellation Energy.

The interstate wholesale market was regulated by the FERC, while the state regulator's primary concern was the cost of electricity supplied to the local SOS clientele. However, as sourcing took place on the interstate wholesale market, the local retail prices thus reflected the FERC regulated markets. The commodity was consumed by a customer connected to a low voltage distribution network, regulated by a state regulator. This in turn needed to be fed from a FERC regulated transmission network, whose costs were ultimately borne by the final consumer.

After passing the state restructuring legislation in 1999 the company became the key initiator in the process of shaping the environment. The company introduced new top management, new strategy, and new organization and overall ways of working. One of the key elements in this field was the introduction of risk management policies in the daily operations. This is reflected in the variable, NEWSTRAT, in Figure 5-1.

The role of the Commission as a consultant for the Governor, the House, and the Senate should be emphasized. This role included commenting on the legislative initiatives by the individual representatives and senators, and regular briefings of the state of energy matters within the state. In the figure this is reflected as the bar "Continuous Consulting".

The interaction between the legislature and the public took two key forms. Both the politicians and the public participated in the public discourse within the media. The politicians gave interviews and published writings about their intentions, while the general public primarily wrote articles in the media, but also approached the politicians directly. Obviously, the most active individuals were more active on this front and thus the signals the politicians heard did not correspond to the opinion of the public as a whole. However, as Downs (1957) points out, politicians do not have knowledge of the opinions of the people if those people do not express their opinion to the politicians. Downs likewise states that by showing activity interest groups, can have their voice heard.

The Commission provided information for the public about the opportunities the competitive market would provide. In the start the Commission issued a media campaign promoting a competitive electric retail market. However, at the same time the Commission was deeply concerned about the pricing level of the SOS electricity, which led to take action to make the SOS prices as low as possible. A side impact of this concern was, in practice, the elimination of competition opportunities by any other service provider.

Towards the end of the observation period, the transfer to market-based rates, i.e. the expiry of the rate freeze in conjunction with the market turmoil caused by hurricanes, stirred the otherwise straightforward process through normal democratic influence. Obviously, here gain, the loudest voices were best heard. This led to a discussion of whether the competitiveness of the markets in Maryland would have to be stopped, or even reversed, as was the case in Virginia.

In summary, the process was initially a legislator-initiated interaction between the regulator and the firm, but as a result of the process this was expanded into a multi faceted configuration of parallel interactions at multiple fora. The focal point in the process thus drifted from the legislator passing the laws, implemented by the regulator regulating the process, to the company adjusting strategy, organization and resource deployment to best manage in the overall business environment. As a consequence of the company actions, the customers' role as voters, in elections and the subsequent impact on the activity of legislative function in the process should be emphasized.

5.1.4 Analysis of Constellation initiated actions vis-à-vis market opening

The following figure, Figure 5-2, illustrates all of the key business actions taken by Constellation during the time frame 2000-2004. The actions are divided into the 8 defined categories. The figure presents the distribution of the events that have been included in the analysis.

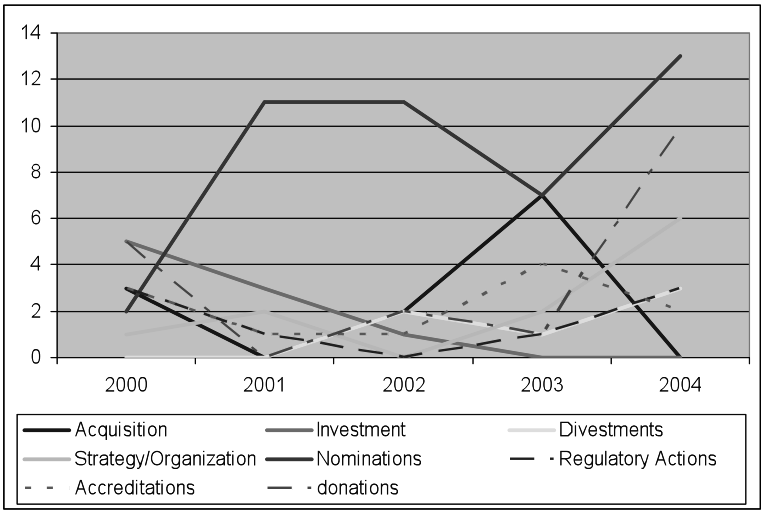

Figure 5-2 Classified actions of Constellation Energy 2000 – 2004.

The figure above indicates that since 2000 the pace of change in Constellation Energy has been very fast. The rate of investments has been in decline since 2000, and the number of nominations to key management positions has been prompt. The number of accreditations has been rising lately; this is because the forerunner role of Constellation had been appreciated by the industry analysts. An interesting feature is that donations have risen dramatically from the prevailing level in 2004. This could provide a hint about the attitude of the firm in the wake of the approaching expiration of a rate cap.

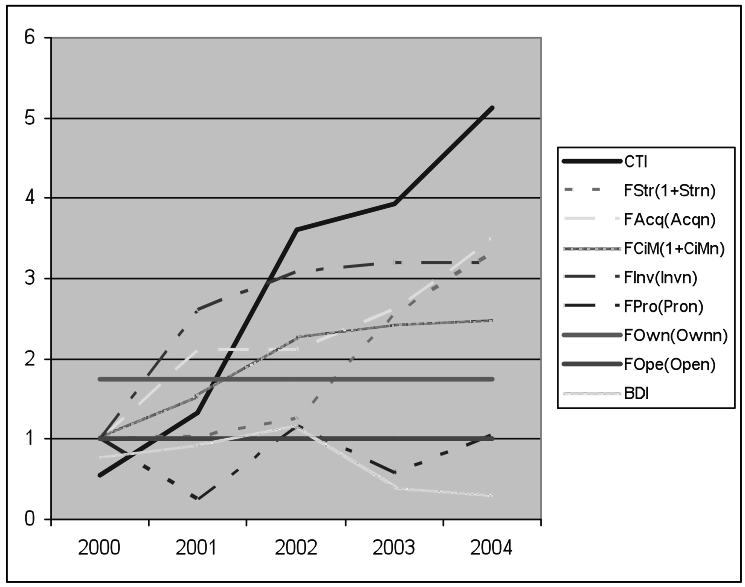

Figure 5-3 CTI and component indices Constellation Energy 2000 – 2004.

The Figure above further reinforces the impression of the pace of change in Constellation, as measured by the CTI (see Appendix B). The overall development has been really rapid throughout the analyzed period after market opening. From the year 2000 until the year 2004, the main contributor of change shifted from investments to changes in management and acquisitions, resulting in substantial increase in revenues. One could say that the constitutors of CTI growth have been carefully sequenced, but it is highly unlikely that the management would have planned it to be this way.

5.2 FORTUM CORPORATION

5.2.1 Organizational context and performance

Fortum was a vertically integrated power company listed on the Helsinki Stock exchange with the Finnish state as the majority shareholder. The company was active in the Nordic power market in electricity generation, retail and distribution, and in the power plant service business.

Fortum was formed in the late 1990s by merging government-owned companies, and an oil company and a power company. The intention was to create a powerful energy company, but in practice this did not materialize and the merger was later demerged.

Table 5-4 below illustrates the key financial figures of Fortum Corporation from the time prior to the merger up to the time prior to the demerger. The sales figures include the structural change in accounting base effective from the financial statements of 2002 to 2003.

	1998	1999	2000	2001	2002	2003	2004
Revenues MEUR	8494	8232	10614	10410	11148	11392	11665
Net Income MEUR	586	705	906	914	1351	1577	1748
Total capitalization MEUR	8 437	9 298	10 085	9 761	13 765	12 704	12 697
Equity MEUR	3 976	4 706	5 022	5 485	5 896	6 406	7 394
Total assets MEUR	11 576	12 539	14 828	14 294	17 960	16 562	16 704
Equity over assets	36 %	39 %	43 %	48 %	41 %	39 %	44 %
Gearing	191,22 %	166,50 %	195,26 %	160,60 %	204,61 %	158,54 %	125,91 %
Net Income over Revenue	6,90 %	8,56 %	8,54 %	8,78 %	12,12 %	13,84 %	14,98 %
Business Diversity Index	0,36	0,33	0,31	0,37	0,70	0,86	0,71
ROE %	5,70 %	7,70 %	8,60 %	8,30 %	10,50 %	12,30 %	17,60 %
ROA %	1,96 %	2,89 %	2,91 %	3,18 %	3,45 %	4,76 %	7,79 %
ROCE %	7,70 %	8,40 %	9,40 %	8,70 %	11,10 %	11,40 %	15,60 %

Table 5-4 Financial and BDI characteristics Fortum Corporation.

The revenue growth of Fortum had been relatively modest. For both the oil and electricity businesses market prices influenced the sales revenues, because the prices were indexed to the market. Thus the revenue level on two consecutive years might be shown to be declining although the sales volume measured in physical volumes increased.

In the capital structure of Fortum the peak in assets and debt in 2002 was caused by the completion of the Birka acquisition, already initiated in 2001. Equity had been growing steadily, indicating the drive in the company to improve overall financial structure. Return on equity,

assets and capital employed likewise show an upward trend. These figures reflect a combination of figures provided by the annual report of 2004 and other calculated figures. There was obviously a change in how Fortum has defined certain accounting concepts, primarily in the definition of capital employed from 2002 to 2003 (both figures are provided in the annual report), because return on equity exceeded the return on capital employed. The line illustrating return on assets is calculated based on the annual report figures.

Acquisitions, and the subsequent financial requirements, had a certain impact on the financial strength of Fortum Corporation. The rising trend from 1998 to 2001 was cut in 2002 and 2003. This was primarily due to the completion of the Birka acquisition. In 2004, the company managed to reverse this trend and returned to a path leading to improvements of the capital structure.

The Business Diversity Index developed favorably indicating that over the analyzed period Fortum became more diversified. As such, this highly depends on the internal structure of the company and the subsequent reporting practice. However, this trend was, cut by including the demerger in 2005 in the figures.

The profitability of Fortum had likewise developed favorably. Part of this could be attributed to high electricity price in the market in conjunction with well-timed investments in carbon free generation base.

5.2.2 Historical narrative

The roots of the company go back to the construction of the Imatra hydroelectric plant in Finland. The construction of the power plant started in 1922, and when commissioned in 1929 comprised of two units, and was the largest hydroelectric power plant in Europe. The production capacity was regarded to be very large and to facilitate the usage a transmission cable was built across the country to the city of Turku. Subsequently, the company bearing the name of the city of where the plant was located and the predecessor of Fortum, Imatran Voima was formed in 1932 to operate the plant. By the time the seventh unit was completed in 1951, the power plant had reached its present capacity, 170 MW. The plant's capacity corresponds to about one per cent of the present peak load in the Finnish market.

The following table, Table 5-5, provides a framework for analyzing the company from the early 1990s to the early 2000s. This table, in conjunction with Table 5-6 that follows it, illustrates the most important characteristics of both the company and its business environment during the time frame.

IVO / Fortum	**Early 1990s**	**Early 2000s**
Primary company	IVO	Fortum
Power procurement, own generation, purchases	Own generation, balancing with neighbors	Own generation, wholesale, distribution and retail, balancing & RM at market
Customer base	Wholesale customers in Finland, service and operating internationally	Wholesale and retail customers in Nordic, trading in Nord Pool
Coverage of business chain	Generation, transmission and wholesale	Generation, RM wholesale retail, distribution
Primary origin of growth	Organic growth first, acquisitions later	Competitive wholesale and retail markets
Key risks in business model	Availability of gen. assets, customer risk to small extent	Regulatory risk, customer risk, market risk
Key Strategic challenges	To build the infrastructure, foresee the forthcoming regulatory changes	Find growth opportunities, management of multiple risks
Diversification characteristics	Solid national business chain where all parties' position static	Unbundled competitive business chain, functional SBU:s

Table 5-5 Characteristics of Fortum / IVO in 1990s and 2000s.

	Early 1990s	**Early 2000s**
Key characteristics of market	Closed monopoly markets	Competitive generation wholesale and retail, few players
Competition in the market	No	Yes
Form of transactions	Static conditions, wholesale and retail tariffs with regulatory review	Competitive pricing in wholesale and retail, few players
Degree of market integration	High	Semi
Relationship between actors	Arms length	Competitive with few players
Cause of imperfect competition	Generation and transmission under integrated company, fixed relationship with distributor retailers	Oligopolistic competition, low number of players with generation and retail under same company

Table 5-6 Characteristics of Fortum / IVO markets in 1990s and 2000s.

From the establishment of Imatran Voima until the early 1990s the Finnish market was very rigid. IVO was the key wholesaler while many industries covered part of their generation needs in-house or through a special generating company. The transmission grid was owned by IVO and an industrial consortium. Prior to the establishment of Fortum in 1998, its predecessor Imatran Voima (IVO) was seeking growth opportunities pursuing an internationalization strategy (**IVOSTR**) building on its in-house engineering competence obtained by designing and building its own generation capacity in Finland. IVO tried to leverage on this both domestically within the power generation industry and internationally. As a result of this strategy, in 1985 IVO constructed and commissioned the Rauhalahti CHP plant to supply the city of Jyväskylä with power and heat. This was followed by the establishment of IVO International (**IVOI**), an

engineering function primarily dedicated to the design and build of power generation plants. This was then followed by establishment of service function for the same market area.

In 1993, IVO generation services was established (**IVOGES**). The unit was granted the Operative and Management arrangements for the Peterborough and Briggs power plants in the UK. In 1994 **Telivo**, a subsidiary for providing national long distance telecom services was established. In 1995 the Geluk Gong CC gas turbine plant in Malaysia was commissioned. IVO decided to participate in the Nordic Joint Venture to construct a hydro power plant in Tanzania. In 1996 IVO established a maintenance company in Hungary.

The path leading to the opening of the internal energy market for competition in Europe was started in 1988 when the EC Commission publishing a document "The Internal Energy Market". This document discussed the obstacles of introducing the internal market principles in energy and the possible means available to overcome these obstacles.

The initial preparatory steps towards the internal energy market were taken by introducing a directive for the transit of electricity through transmission grids (**90/547/EEC**) and a Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users (**90/377/EEC**). From the beginning of 1994 this was to also apply in Finland. For this reason this requirement was included in the 1992 Finnish government energy policy statement.

The government's proposal relating to law opening power markets for competition, electricity market act was proposed to parliament in August 1994 (HE 138/94) and later passed as law 386/1995 (**EMA95**). This legislation fundamentally changed the nature of energy business in Finland by introducing competition to the end user markets and required the firms to unbundle the generation and marketing of power from distribution and transmission. Prior to this, the legislation covering the electricity markets in general were the electricity law of 1979 (319/79), the law on competition restrictions from 1992 (480/92) and the consumer protection act of 1978 (38/78). The new legislation subsequently replaced the key elements of the said laws. The transmission network operators and all key players in the power market provided an opinion on the proposed legislation (**LEXCOM**).

At the time of preparing the legislation it had became apparent that there was a need to establish a regulator to regulate the power markets. A law proposing the establishment of an electricity regulator was then subsequently put before parliament as government proposal HE 202/1994 (**REG**). This proposed law establishing the Electricity Market Center (the predecessor of the

Energy Market Authority) was to enter into force two months prior to the electricity market act, or at the latest at the same time.

The establishment of Nord Pool, which had taken place in 1993, as a power exchange in Norway, and the association of Finnish El-Ex as an affiliate company under Nord Pool, laid the foundation for integration of the Nordic wholesale markets and the opening of the markets for retail competition.

In 1995 Finland and Sweden become members of the European Union whereby both countries subsequently needed to implement EU legislation in the national codex.

In fall 1998 and spring 1999 two individuals complained (**TECOMPL99**) about the distribution rates of Tuusulanjärven Energia (later Fortum Distribution). The energy market Authority ruled in 2001 that for 1999 the rates would need to be corrected retroactively (**EMA01**).

As a reaction to the simultaneous introduction of competition in Finland and Sweden, in 1996 IVO had started implementing a new strategy (**IVONSTR**) to enter the Swedish market by buying shares of Gulspång (**ACQGS**) in Sweden; aiming to gradually gain the majority shareholding of the company. Later Gulspång acquired Skandinaviska Elverk (SEV) (**ACQSEV**) and grew substantially. By 1998 IVO had acquired 100 per cent of the equity of both firms, which enabled a merger of these firms. This enabled further moves on the path towards the establishment of Birka, a joint venture with the City of Stockholm (**ESTB**).

As directives 90/547/EEC and 90/377/EEC set the overall framework for the opening of the internal energy market for competition, Directive 96/92/EC of the European Parliament and of the Council dated 19 December 1996 (**1st Package**) set out the framework for common rules for the internal market in electricity. This first package has subsequently been complemented by the second package *(*2003/54/EC*)* (**2nd Package**) and a third package is not completed at the time of the completion of this study.

Subsequent to passing the electricity market act Fingrid was established as a national transmission grid operator by merging the transmission networks of Imatran Voima and Teollisuuden Voimansiirto on November 29, 1996 (**FG**). The company began commercial operations on September 1, 1997.

The process leading to forming Fortum begun in 1997, when The Finnish Ministry of Trade and Industry put forward a proposal to combine the oil, gas and chemicals companies Neste Oy and Imatran Voima Oy into a new integrated energy group. The final decision for forming the

Fortum Group, incorporating both IVO and Neste was finally made in December. On 28 February 1998, the holding company IVO-Neste Yhtymä Oy (**FORTUM**) was established, and in June the company was renamed Fortum. This was followed in December by the listing of Fortum Corporation on the Helsinki Stock Exchange. Fortum's new organization became effective on 1 January 1999, thereby making the former separate firms Neste and IVO subsidiaries of Fortum.

The first chairman of Fortum, Matti Vuoria came from the Ministry of Trade and Industry. The CEO of IVO, Heikki Marttinen was nominated as the CEO of Fortum (**1stCEO**).

The strategy of Fortum has evolved during the short history of the firm. When Fortum was formed, the strategy was a combination of the strategies of the merged firms Neste and IVO, and the resources naturally consisted of those of the parent firms (**FINISTR**). As there were no significant synergies between the activities of the merged firms, and the businesses were developed separately the nature of the merger was primarily financial.

At the beginning, the newly merged company did not have a clear profile and the media often blamed the company's two-headed management structure for causing a lack of direction and profile in the company (**PR1**). This was substantially clarified when Mikael Lilius was nominated as a CEO of Fortum in September of 2000 (**CEONOM**). After his nomination, however, the current strategy of Fortum began to emerge. The new strategy, with a clear focus on the Nordic power market, built on Fortum's position in every part of the vertical value chain within the Nordic electricity markets. The generation portfolio was heavy with regard to hydropower. Services would complement this pattern with no such geographical focus (**FORSTR**).

In 2000 Fortum increased its generation capacity by acquiring Stora Enso's power assets in the Nordic region (**ACQSE**) and Wesertal (**ACQWE**), a power utility in northern Germany. Additional retail and distribution businesses were acquired in Finland through the acquisition of Länsivoima Oyj (**ACQLV**), which was then merged with Fortum. The parallel development in Finland and Sweden regarding opening of the electricity markets for competition enabled the acquisition of these assets.

Natural Gas production started in the Åsgard gas field in Norway in October 2000.

In 2001 an agreement with the City of Stockholm was signed regarding the purchase of the outstanding shares of Birka Energi (**ACQBIR**). The transaction was finalized in 2002. This constituted a substantial increase in the distribution and retail assets of Fortum through which the

company become the operator of the Stockholm city energy system. In addition, in 2001 Fortum's affiliate in Norway, Fortum Petroleum AS was awarded an oil and gas exploration license (a 30 per cent share thereof) in the northern North Sea, adding a substantial position to the Norwegian upstream production assets.

The Energy Market Authority found Tuusulanjärven Energia Oy to have exceeded the highest permitted return on capital employed in 1999. (Dnro 213/42/98 and 80/421/99) (**EMA01**). As a response to this ruling Fortum applied to the Supreme administrative court in May 2001 (**FOR01**).

In 2002, Fortum introduced a new strategy that concentrated on the power and heat industry in the Nordic area. As a consequence of this new approach Fortum decided to sell their shares of Fortum Energie GmbH in Germany (**DIV02**) (Wesertal utility and generation plus a portfolio of power plant development projects.), indicating thus the end of the presence of Fortum in the German electricity and gas market. The company decided likewise, to divest the Norwegian E&P business (production of oil and natural gas, and exploration license share) and the Omani oil production assets. Fortum shares in Borealis petrochemical activities had already been divested earlier. These divestments were in line with the new strategic orientation.

In early 2002, the distribution industry in Finland applied for some changes to the methodology used to calculate the justifiable return on invested capital. The supreme administrative court ruled in December that the EMA ruling of 2001, 2002 (3349, Dnro 1244/2/01) was correct (**KHO02**). Fortum merged their distribution businesses (**DISMER**).

The parliament approved the construction of the Olkiluoto 3 nuclear power plant (**OL3APR**).

The second package in opening the EU internal energy market for competition was introduced as Directive 2003/54/EC of the European Parliament and of the Council dated 26 June 2003. This concerned common rules for the internal market in electricity and repealed Directive 96/92/EC (**2nd package**).

In 2003 Fortum decided to participate in the new nuclear generation project in Olkiluoto by investing EUR 185 million in TVO's new nuclear power plant (**OL3FOR**). At the same time the company commenced preparations to separate its oil business into a new company and subsequently to list the new company on the Helsinki stock exchange. This effectively reversed the merger of IVO and Neste, which was initiated in 1997 and created Fortum.

Fortum strengthened its position in the Nordic retail market by acquiring a stake in Norwegian energy company Hafslund. Another move intended to solidify the position of Fortum in the Nordic market and areas closely attached was the asset swap with E.On, whereby Fortum obtained a position in Northeastern Russia. This was continued in 2003 by increasing Fortum's shareholding in OAO Lenenergo.

Fortum increased its share of Lenenergo again, in Russia 2004 and divested its Hungarian subsidiary. The same year continued with the divestment program of non-core businesses. An attempt to enter the Norwegian power business failed. In October, the Swedish government abandoned negotiations with the primary generating firms (including Fortum) regarding nuclear power.

In 2005, the Oil businesses were separated from Fortum. The name of the new oil company became Neste Oil Corporation (**DEMER**). This was then followed by the IPO of Neste Oil. Later Fortum further strengthened the retail portfolio through the acquisition of E.On Finland (**ACQEON**). The Competition Authority approved the merger in 2006. The construction work of Olkiluoto 3 generating station commenced in 2005.

5.2.3 ESA of Fortum Corporation

The figure below, Figure 5-4, shows the ESA of Fortum Corporation. The early phases of the process took place at the time when Finland was not yet a member of the EU and thus the EU directives did not initially apply to Finland. The national legislation, however, was passed in 1995 thus opening the national electricity markets for competition and establishing at the same time the energy regulator. However, membership in the European Economic Space (EES), and subsequently full membership in the EU from beginning of 1995, implied that the EU directives would need to be included in the national codex.

Initially the focal point in the process was the company interacting with the competition authorities during the closed markets phase. At the time of passing the competition legislation and establishing the regulator the point of focus obviously shifted to the legislative level. As the energy market act had been passed, the focal point of company action obviously shifted towards managing the process vis-à-vis the competitive markets. The key elements in this were strategy formation, and subsequent changes at the organizational level and resource configuration.

In the competitive markets the focus of the company action was on managing the interface with the market and the competition. This was reflected in forming a new company strategy that emphasized the customer interface and the direct access to the customers. Customer complaints regarding the distribution tariffs filed at the competition court could be seen as a cause to initiate the merging of the various distribution firms within the group.

The development of the EU level directives was, at the time of commencing the study still pending. The initial and second package had been passed, but the third package was still being processed. The fact that the development of national legislation had progressed at a faster pace than the general EU-wide legislation implementation process had required, yielded the company with a benefit compared to firms operating under a slower development pace. A degree of predictability and legislative stability obviously creates an operative framework for the company that enables that company to better plan the activities, because the environment is not expected to be in constant regulatory change. Thus, the firms functioning under legislation that already follow the forthcoming legislation, will have a benefit because they have already proceeded along the learning curve and adapted their organizational models and resource deployments to meet the foreseeable changes in the operating environment. Clearly, the counter-argument is that delaying introduction of competition enables the firms to prepare themselves for the forthcoming changes, while maintaining the earnings opportunities of a closed market. As parliament had approved the concept of constructing the next nuclear plant, the company decided to participate in the construction of that plant thereby enabling them to source generated nuclear power from the new plant.

The process ends in demerging the company so that oil and power activities took separate ways. Reversing the merger process of 1998 could be interpreted as recognition that the decision of 1998 was a mistake. However, the decisions are products of the prevailing information at the time and are based on the views available at that time. Obviously these decisions cannot be undone – they can only be reversed.

The process begun in a stable static state that could be characterized by the interaction between the firms and the competition authorities while the prevailing regulatory environment kept competition out. This was impacted by the passing of the competition act that caused the system to seek for a new stable state. At this new static state the company was primarily interacting with the competition and customer base with the new static regulatory framework.

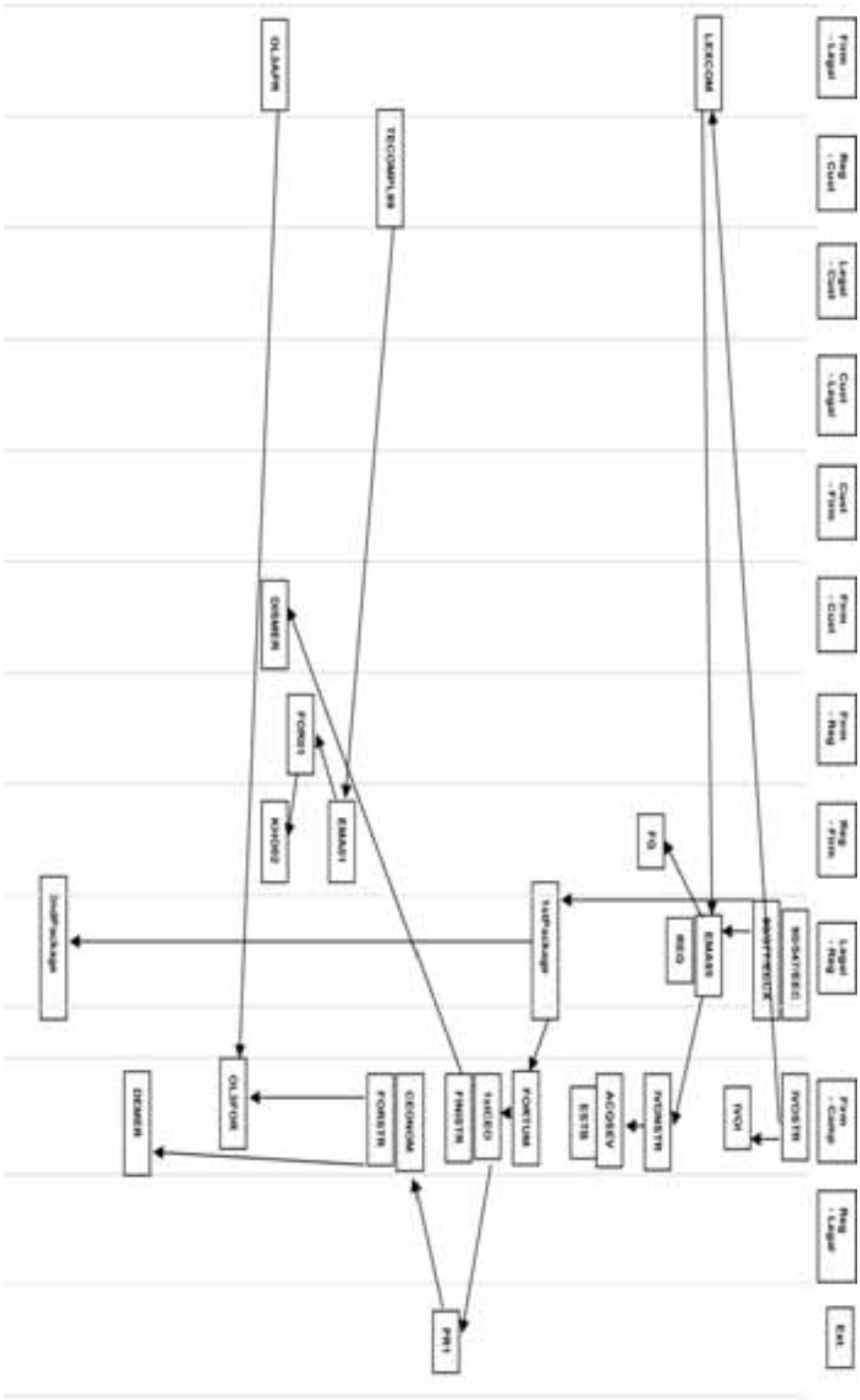

Figure 5-4 ESA of Fortum.

5.2.4 Analysis of Fortum initiated actions vis-à-vis market opening

The actions in the context legislator-regulator-firm-customer have been discussed above. In the following the company actions are discussed in the market context, i.e. primarily between the firm and the market. This context falls outside the context discussed above, and thus complements the analysis with a different perspective. The following figures illustrate the actions the company took vis-à-vis the changes in the market place. The actions are divided into eight categories. Subsequently the company-initiated actions are used to calculate the CTI.

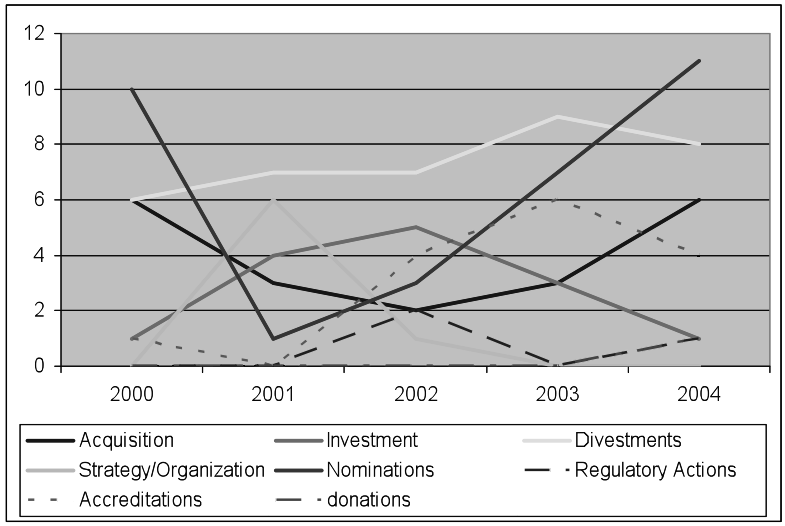

Figure 5-5 Classified actions of Fortum 2000 – 2004.

Figure 5-5 illustrates the classified actions at Forum between 2000 and 2004. One of the major differences between Nordic and US firms is that Nordic firms do not donate funds for philanthropy through benevolent organizations. A natural cause for this is the fact that in Nordic societies the state provides a safety net for its members and businesses do not need to be involved in these kinds of activities.

Analyzing the CTI reinforces the impression already obtained through analysis of the events. The change Fortum has gone through can be sequenced so that originally it was primarily acquisitions, then management reorganizations, and finally investments that changed the company. As such, the change is fundamental and has extended through all parts of the

company. An interesting detail is, however, that the strategy index has not changed; indicating that despite all these changes the company has not grown much.

Therein perhaps lies the problem for Fortum – how could it grow and benefit from being a streamlined organization with well-oiled processes. The Nordic market is small and the growth in the market is slow. Growing outside the home base would require a different set of resources; these Fortum does not have. Another possible path is to find a cooperation partner from other markets, pursue a merger plan, or become a takeover target.

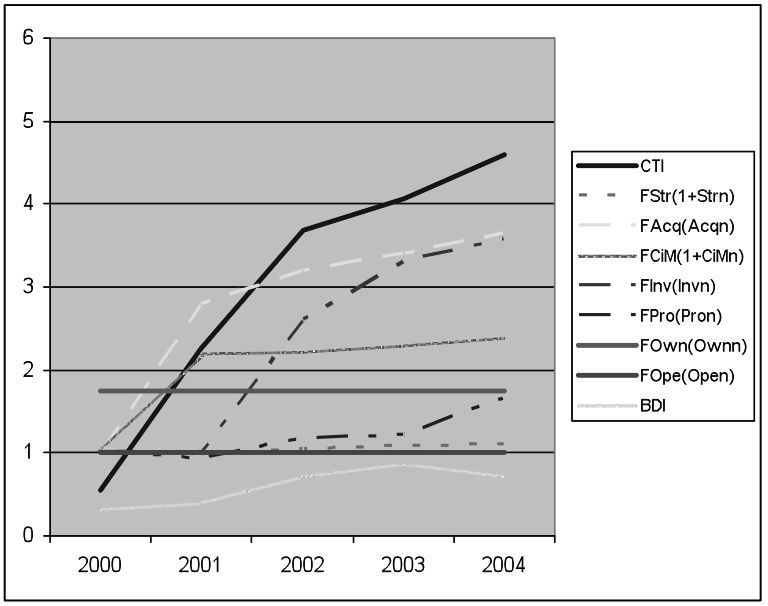

Figure 5-6 CTI and component indices of Fortum 2000 – 2004.

5.3 VATTENFALL

5.3.1 Organizational context and performance

Vattenfall is Europe's fifth largest generator of electricity and the largest generator of heat. The government of Sweden holds all the shares of the firm. The company acts in all parts of the electricity value chain - generation, transmission, distribution and retail, electricity trading and generation and sales of heat.

Vattenfall had operations in Sweden, Finland, Germany and Poland. The parent company, Vattenfall AB, was wholly owned by the Swedish state. . In 2005 the company had 32 231 employees with net sales of 129,2 billion SEK (13,7 billion EUR), consisting of electricity sales of 221,0 TWh, generation 169,1 TWh and heat business 34,1 TWh.

The following table, Table 5-7 presents the financial characteristics of Vattenfall over the period 1999 – 2004. Vattenfall altered the reporting structure in 2001 and thus in the presentation financial performance from 2000 to 2001 has been changed accordingly. The inclusion of German business led to a change of the structure of the company to a geographical structure because previously the company was organized along the lines of a business-based structure. As such, one can question, would it not more beneficial to organize the businesses along business lines and not geographically, because by this structural organization, obtaining potential benefits inside the businesses could be hard to realize. Sometimes it can be hard for the management of the acquired business to adapt culturally to the operating structure of the acquirer and they wish to retain the old reporting and operative structure.

The impact of the German acquisitions especially, is clearly reflected in the balance sheet of Vattenfall. The inclusion of German assets in the financial statements is also reflected in the return figures. The difference between Capital employed and Total assets consists mostly of provisions regarding future storing of nuclear waste, deferred tax liability and negative goodwill, as booked according to Swedish accounting standards.

	1999	2000	2001	2002	2003	2004
Revenues MEUR	27 754	31 695	69 003	101 025	111 935	113 366
Net Income MEUR	2 538	2 970	4 190	7 566	9 123	11 776
Total capitalization MEUR	64 412	85 787	128 111	139 869	138 431	135 329
Equity MEUR	33 347	35 120	39 578	45 129	52 884	62 316
Total assets MEUR	86 663	115 005	259 043	276 276	264 965	256 915
Equity over assets	42,90 %	35,30 %	22,70 %	20,00 %	23,40 %	27,80 %
Gearing	159,88 %	227,46 %	554,51 %	512,19 %	401,03 %	312,28 %
Net Income over Revenues	9,14 %	9,37 %	6,07 %	7,49 %	8,15 %	10,39 %
Business Diversity Index	0,53	0,62	0,90	0,66	0,79	0,72
ROE %	8,70 %	9,90 %	11,80 %	19,10 %	20,20 %	22,40 %
ROA %	2,93 %	2,58 %	8,80 %	10,10 %	12,10 %	15,20 %
ROCE %			3,27 %	5,41 %	6,59 %	8,70 %
ROCEn Given	9,30 %	9,70 %				

Table 5-7 Financial and BDI characteristics Vattenfall.

The return on equity, assets and capital employed at Vattenfall were somewhat contradictory and as it is not clear on what basis the different items were shown in the financial statements. The ROCE figures were show both as calculated and as provided in the financial statements.

A surprising aspect was finding that inclusion of the newly acquired German businesses immediately yielded increased return on both assets and capital employed, which would indicate a very profitable investment. As the way these return ratios were calculated seemed to differ between the annual reports and the calculations herein, I did not regard it fruitful to speculate why the figures were different.

The impact of the German acquisitions can clearly be seen in the picture indicating the financial strength of Vattenfall. Although a substantial part of the equity and liabilities in the balance sheet was covered by provisions, depending on the way the ratios were presented, the equity over assets dived immediately after the acquisitions, with the similar but mirror image impact on gearing.

The Business Diversity Index over the researched time frame has remained relatively constant. There are ups and downs but essentially no SBU has dominated the overall figure. This could naturally change if the business units were defined in a different way.

The overall profitability of Vattenfall, calculated as net income over revenues, remained relatively stable over the researched period. Only in 2001, after the German acquisitions, was there was a dip. The inclusion of the profit contribution of the German businesses naturally helps to recover the investment expenses emerged.

The trend points upwards, and if this trend continued, the grounds for possible IPO look very promising. However, the policies of the present owner and Swedish internal politics impact strongly the company's ability to begin to obtain funds from the private equity capital market.

5.3.2 Historical narrative

Vattenfall was formed in 1909 from the Trollhättan Canal and Waterworks Administration to produce electric energy from water. At the time, electric power technology was still in its infancy. But many people saw the opportunities of electricity and wanted to make use of the potential of Sweden's waterfalls. Parliament's decision to establish Kungliga Vattenfallstyrelsen (the Royal Waterfall Board) indicated the government's wish to engage actively in electricity production.

Although the region of Norrland in central Sweden had already been connected to southern Sweden in the 1930s, it was only in 1952 when the Swedish power network was interconnected. The Harspranget hydroelectric plant, inaugurated in 1952, and at the time the world's largest hydroelectric plant, led to the development of a 1 000-kilometer power line, reaching to the south of Sweden. The power cable was the world's first power transmission cable with rates up to 380 kilovolts.

In 1963, Vattenfall was one of the initiators of the Nordel electricity alliance between Sweden, Denmark, Norway, and Finland. The alliance, which created a common pool of electric power, was launched in 1965, marking Vattenfall's first international sales of electricity.

During the 1950s and 1960s, resistance grew to further exploitation of the rivers for hydropower generation. At the same time, electricity demand continued to rise and popular opinion was that Sweden should invest in nuclear power. In collaboration, AB Atomenergi and Vattenfall set up the first research reactor in 1954 at the Royal Institute of Technology in Stockholm to generate both heat and electricity. The Ågesta plant, south of Stockholm was a heavy water reactor, fuelled by Swedish, non-enriched uranium. The emergence of nuclear power was used as an argument to hinder further development of the large rivers for power generation purposes.

Preparations for the launch of the first Swedish reactor began in 1965 and this reactor at Oskarshamn came online in 1972. Through the 1970s and 1980s, Sweden added a number of

new reactors, including two more at Oskarshamn in 1974 and 1985, four at Ringhals between 1976 and 1983, three at Forsmark between 1980 and 1985, and a plant at Barsebäck in 1977.

The following table provides a framework for analyzing the company from the early 1980s to early 2000s. Table 5-8 in conjunction with the Table 5-9 below illustrate the most important characteristics of both the company and its business environment over the researched time frame.

Vattenfall	**Early 1990s**	**Early 2000s**
Primary company	Vattenfall	Vattenfall
Power procurement, own generation, purchases	Own generation, balancing with neighbors	Own generation, wholesale, balancing & RM at market
Customer base	Wholesale customers in Sweden	Wholesale and retail customers in Nordic, trading in Nord Pool
Coverage of business chain	Generation, transmission, wholesale distribution and retail	Generation, RM wholesale retail, distribution
Primary origin of growth	Organic growth first, acquisitions later	Competitive wholesale and retail markets acquisitions
Key risks in business model	Availability of gen. assets, customer risk to small extent	Regulatory risk, customer risk, market risk
Key strategic challenges	To build the infrastructure, foresee the forthcoming regulatory changes	Find growth opportunities, management of multiple risks
Diversification characteristics	Solid national business chain where all parties' position static	Unbundled competitive business chain, functional SBU:s

Table 5-8 Characterization of Vattenfall in 1990s and 2000s.

	Early 1990s	**Early 2000s**
Key characteristics of market	Closed monopoly markets	Competitive generation wholesale and retail, few players
Competition in the market	No	Yes
Form of transactions	Static conditions, wholesale and retail tariffs with regulatory review	Competitive pricing in wholesale and retail, few players
Degree of market integration	High	Semi
Relationship between actors	Arms length	Competitive with few players
Cause of imperfect competition	Generation and transmission, distribution and retail under integrated company, fixed relationship with other distributor retailers	Oligopolistic competition, low number of players with generation and retail under same company

Table 5-9 Characterization of Vattenfall markets in 1990s and 2000s.

In the late 1970s the nuclear power debate in Sweden led to a referendum on the fate of nuclear power in the country. This discussion was not dampened by the Three Mile Island incident at Harrisburg, USA in 1979. In the early 1980s a referendum was arranged concerning the destiny of nuclear power in Sweden. This referendum (**NUCREF**) resulted in the decision to end further nuclear plant development, complete those reactors that were under construction, but not to commence construction of any new plants. This decision left Sweden with twelve reactors, seven of which were owned by Vattenfall. The phasing out of nuclear energy by 2010 was a major setback for Vattenfall. The firm began research and development on alternative energy sources (**ALTEN**), including wind and solar power, as well as gas turbines and fuel cells. Natural gas was introduced in Sweden in 1985 by a consortium in which Vattenfall had a major role (**NGINT85**).

The discussion regarding opening the market for competition had begun in the 1980s as the generation capacity in Sweden had peaked after commissioning of the nuclear plants that had been under construction at the time of the referendum. Of the nuclear plants Barsebäck I was shut down in the fall of 1999 (**BCLO99**). Barsebäck's second reactor shut down was scheduled for 2005 (**BCLO05**). The timetable for further shutting down of nuclear generation plants was not determined.

In 1992 Vattenfall was incorporated as a public limited company (**VINC92**). However all shares remained in the hands of the government. Various roles of the company, such as managing the core network infrastructure, canal operations, and contingency planning for the entire power industry – were deemed to be too important to be part of a private company subject to competition. As a result of these discussions the national power transmission network, Svenska Kraftnät was unbundled (**SKDEM**). Prior to this move the Nordic power firms had had friendly co-operation (Nordel), and they shared the annual proceeds they could obtain by sharing the peak load and backup capabilities. In 1992 the company took the first steps to enter the Polish energy market (**POLENT92**).

Vattenfall concluded the first major sales contracts in the Finnish market by selling power to Enso-Gutzeit and mining group Outokumpu in 1995 (**INTSALE95**). In 1995 Vattenfall's board charted out an international growth strategy for the firm (**INTSTRAT**). However, it took some years to put this decision into practice. It requires a strategy to be in place that has suitable target firms for acquisition, win the possible competition to acquire them, arranging finance for the purchase and the fundamentally difficult part is to integrate the acquired company into an existing structure.

At the beginning of 1996 the electricity market was opened for competition (**DEREG96**). The process was designed so that by November 1, 1999 all consumers would be free to choose the power supplier and switch without cost. At the same time a regulator, Energimarknadsinspektionen (**EI96**) was established.

Nord Pool was founded in 1993 in Norway as Statnett Marked (**NP93**). In 1996 Sweden joined the power exchange and the world’s first multinational exchange for trade in power contracts was created (**SWPN96**). Statnett Marked was renamed Nord Pool. In 1998 Finland joined Nord Pool and in 1999 Western Denmark joined the market place. In 2000 the Nordic wholesale power market became fully integrated when Eastern Denmark joined Nord Pool. NordReg.

Vattenfall became an early entrant in Finland by setting up a subsidiary, Vattenfall Oy, in 1994 (**VFOY94**). The following year 1995, the company purchased two regional electricity producers in Finland (**FINACQ95**). Subsequent to the Finnish market opening for competition in 1995 (**FINDER95**), the company also began selling electricity directly to customers in Finland. Likewise, in 1995 Vattenfall entered Norway (**VFN95**) and Denmark (**VFD95**), setting up offices in those countries.

Vattenfall looked for growth farther a field. The company targeted the fast-developing Asian and South American markets, setting up an investment vehicle, Nordic Power Investment (NPI). Through NPI, Vattenfall began acquiring shareholdings in a number of Asian and Latin American power plant projects, such as the 1995 purchase of a 25 per cent share in Thailand's Thuen Hin-Boun hydropower station.

The economic crisis that swept through much of the Asian and Latin American markets in the mid-1990s cut short Vattenfall's expansion plans in those regions. Instead, the company decided to return its focus closer to home, where pressure had been building toward the deregulation of the entire European Community energy market. Germany, the single largest European energy market, appeared a natural choice for Vattenfall's expansion, with deregulation expected to come in 1997. In 1996, Vattenfall took its first steps into the German market, setting up a joint venture, Vesa Energy (**GER96**), with Vattenfall taking a 75 percent share. The JV was based in Hamburg, in partnership with Kommunalfinanz. Vesa's operation initially targeted East Germany, buying gas-fired plants in Neubrandenburg, Schwerin, and Cottbus.

However, with deregulation in Germany stalled Vattenfall returned its focus to the Scandinavian market. In 1998, the company launched a joint venture with Denmark's NESA, forming the company Stroem AS. Vattenfall also launched a $625 million acquisition offer for Stockholm Energi, the third largest electricity supplier in Sweden. However, this did not progress and the City of Stockholm accepted a proposal from Fortum.

The opening of a component market adjacent to the traditional market area created opportunities for Vattenfall to expand internationally. In 1996 competition was introduced in the Swedish power market and Finland and Norway had about similar schedule. Vattenfall bought a distribution company in Finland, Hämeen Sähkö in 1996 (**HS96**).

Vattenfall continued to expand into Germany, where the electricity market was deregulated in 1998 (**GERDEG98**). The German Bundeskartellamt (Federal Cartel Office) demanded that the

largest power conglomerates of the country, RWE and E.On, must give up their assets in the former East Germany in order to prevent them from dominating the German power market. In 1999 Vattenfall acquired 25,1 per cent of Hamburgische Elekrizitätz - Werke AG (HEW) (**HEW99**), a company that had supplied Hamburg with electricity and district heat for over 100 years.

The Figure above illustrates the actions Vattenfall took before the year 2000. The striking feature of the action is that they concentrate on company-initiated actions in new markets and externally initiated actions in the home market. Although Vattenfall had all the time been a 100 per cent state controlled entity, in a business sense it had relative liberty to take action as it saw fit.

Vattenfall Europe was formed in 2000 (**VFEUR00**). As a result, the number of employees increased from approximately 8 000 (10 per cent outside Sweden) to just over 12 000 (40 per cent outside Sweden).

In 2000 Vattenfall acquired a 55 per cent holding in Electrocieplownie Warszawiskie (EW) in Poland (**POLACQ00**), which is Warsaw's electricity and district heating company and Poland's largest electricity supplier, Gornoslaski Zaklad Elektro-energetyczny (GZE).

When acquiring the minority share of HEW, Vattenfall had the option of acquiring the remaining shares of HEW and thus in 2001 Vattenfall became the majority shareholder in HEW. Through HEW, in 2000 Vattenfall acquired a generation and transmission network company Veag Vereinigte Energiewerke AG and the fuel supplier Lausitzer Braunkohle AG in former East Germany (**VEAG01**). Likewise, through HEW, in 2001 Vattenfall become the majority owner of the City of Berlin energy company, Bewag that had begun its activities in the city in 1885 (**BEWAG01**).

Before 2001 the key business line was electricity, primarily in Sweden. This was complemented by smaller auxiliary businesses. As the acquisition of Finnish and especially German businesses expanded the business base, the reporting in the financial report was changed accordingly. The impact of the German acquisitions to the overall business base of Vattenfall cannot be overemphasized, as the company effectively doubled its revenue base, not to mention the impact on assets (**GRWTH**)

The actions of Vattenfall during 2000 – 2004 strongly reflected the major Polish and German acquisitions. A fact that makes these acquisitions special is that they were carried out during a very short time frame. Such a large number of major acquisitions over a very short period would

be a risky pattern for any listed company, but Vattenfall appears to have managed these acquisitions relatively well.

5.3.3 ESA of Vattenfall

The figure below, Figure 5-7 shows the ESA of Vattenfall. The events begin at the nuclear referendum in the early 1980s that still today limit the company's ability to take economically feasible decisions. The early phases of the process took place at the time when Sweden was not yet a member of the EU and thus the directives of 90's did not initially apply for Sweden. However, the national legislation opening the market for competition in 1996 was passed, establishing at that same time the energy regulator. The membership in the ESA and subsequently full membership in the EU from the beginning of 1995 however implied that EU directives would need to be included in the national codex.

Initially the focal point in the process was the company, as part of governmental structures during the closed markets phase, taking orders from the government. Passing the competition legislation and establishing the regulator obviously shifted the focal point. Prior to opening the markets for competition the governmental agency Vattenfall was turned into the company Vattenfall, maintaining however full governmental control in the company. The first indication of internationalization was the entry into Poland in 1992, although the internationalization strategy was approved in 1995. Although this decision was taken in 1995, obviously this decision to establish an affiliate company in Finland in 1994 was part of the scheme. This could be regarded as a sign of the time it takes to prepare the decisions so that the process of making the decisions begins substantially prior to the time when the decisions are made public.

As the energy market had been made competitive, in Finland, Sweden, Norway and Denmark the focal point of company action obviously shifted towards managing the process vis-à-vis these competitive markets. The key elements in this were strategy formation, and subsequent changes at an organizational level and resource configuration. Here we are dealing with multiple markets simultaneously, with the investment needs and resource configurations evolving in parallel.

The internationalization strategy appears to be in the center of this process, because all the entry and investment decisions are subsequent to this. Another parallel development was the establishment of the Nord Pool wholesale trading market that fundamentally formed the basis for

a development of real Nordic market area. Without establishing the trading platform development of the pan Nordic market area would not have become possible.

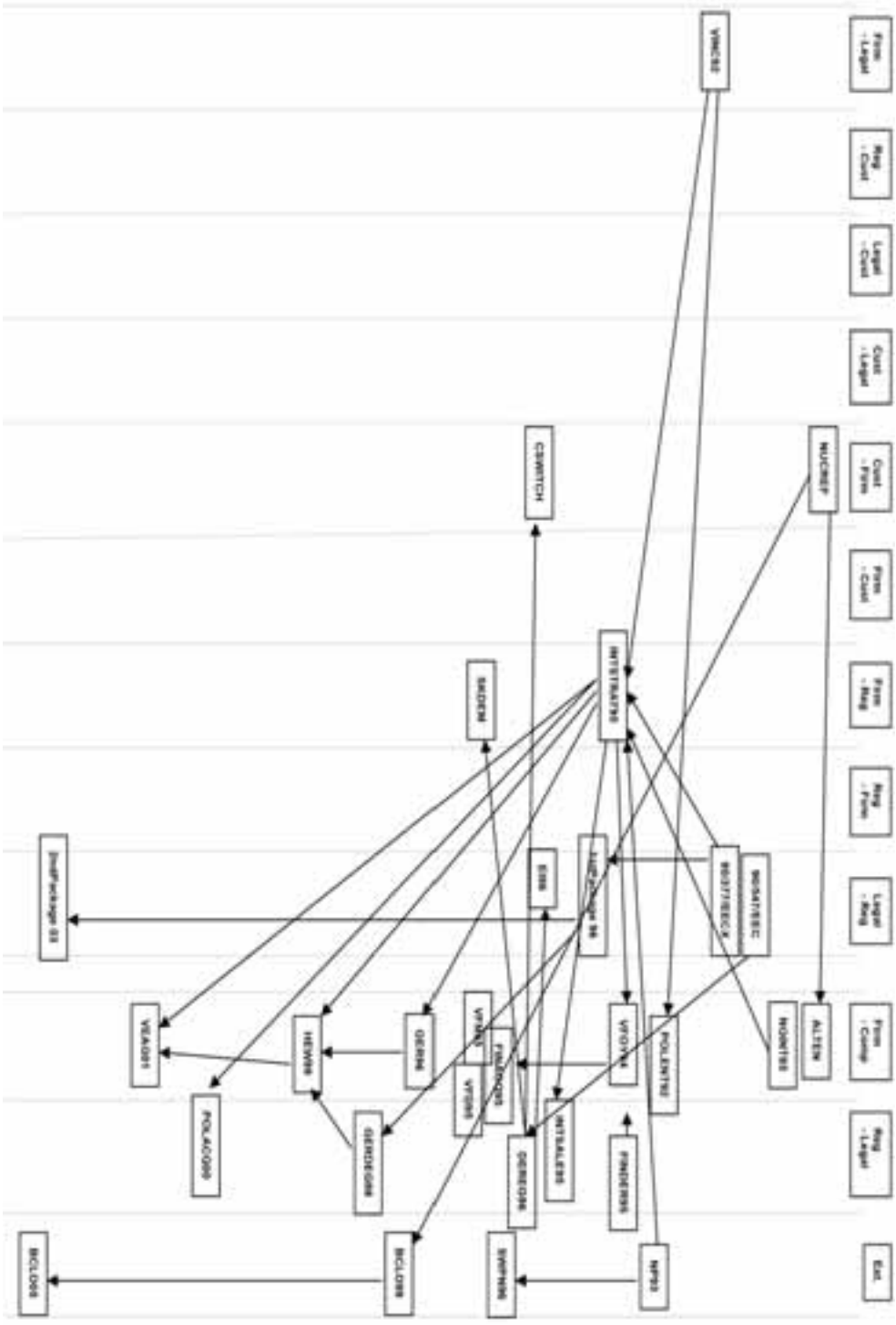

Figure 5-7 ESA of Vattenfall.

5.3.4 Analysis of Vattenfall initiated actions vis-à-vis market opening

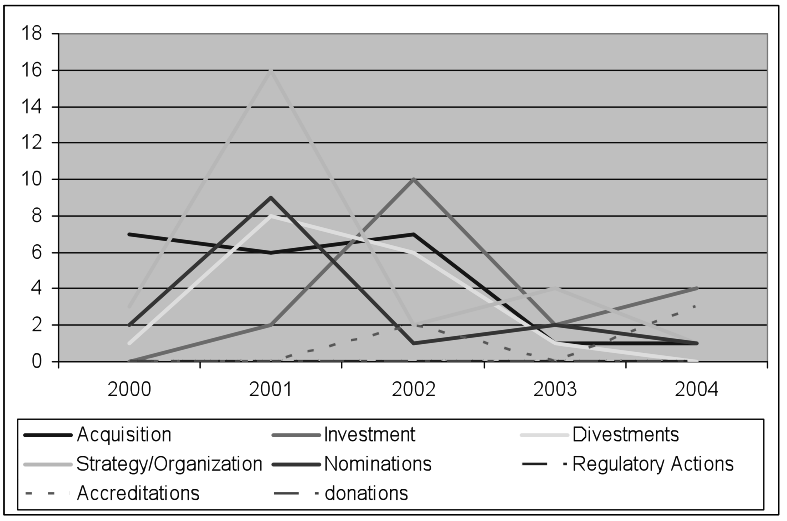

Figure 5-8 Classified actions of Vattenfall 2000 – 2004.

The company-initiated actions of Vattenfall appear in waves, as is the situation for most of the case firms. Strategy / organizational announcements and nominations, and somewhat surprisingly divestments dominate the action pattern in 2001. The pattern of 2001 is followed in 2002 by investment, again a logical step after the major acquisitions in 2001. From 2002 to 2003, and in 2004 the overall number of actions steeply decline. This could be interpreted to reflect the time it takes to digest the major acquisitions and integration into existing businesses. Towards the end of the analysis period, the investments gain momentum again, as accreditations begin to emerge.

The overall CTI rises steeply over the entire period. The main contributors to the CTI are, at the beginning acquisition, then complemented by strategy and management changes. Later this is further complemented by investments.

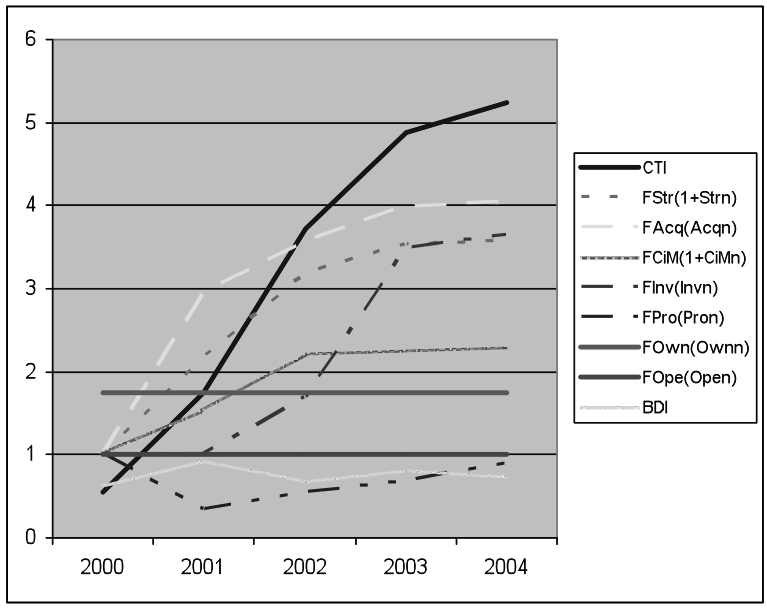

Figure 5-9 CTI and component indices Vattenfall 2000 – 2004.

In general the overall picture is relatively consistent; the actions by the management seem to be on a continuous path directed towards fundamentally altering the nature of the company.

5.4 CENTRICA

5.4.1 Organizational context and performance

Centrica was a multi product energy retail company with primary activities in the UK, but a significant position outside the UK market. The history of Centrica and the British gas industry goes back to the early 1800s. Centrica at the time of the study was built on the foundation of the demerged commercial arm of British Gas, formed as a result of the restructuring of the industry and opening of the market for competition. The company had, on multiple occasions, been shaped by decisive government actions practically every 20 years. Examples of these decisive government actions were the nationalization of gas industry in 1948, the decision to introduce natural gas to replace manufactured coal-based gas in 1966, and then finally privatization in 1986 with a subsequent demerger into transmission, retail and storage. Centrica, although not a traditional electric utility company was included in this study due to the intensive role as an electric retail company and the position the company had reached in the UK.

In 2004 Centrica had net sales of GBP 18,3 billion. In the gas business Centrica had lost market share, especially in the industrial and commercial segments, but had managed to leverage the customer base in residential retail. Table 5-10 presents the financial characteristics of Centrica between 1998 and 2004. Since 2002 the reporting structure has been altered indicating the introduction of both new geographical markets and new areas of business.

The reduction of revenues from 1998 to 1999 clearly reflects the impact of opening the market for competition. The reduction in revenues could have been much more substantial if the required reduction of market share was more significant.

	1998	1999	2000	2001	2002	2003	2004
Revenues MEUR	7481	7217	9933	12611	14315	17931	18303
Net Income MEUR	123	361	466	466	763	837	938
Total capitalization MEUR	1036	1398	1629	3105	3905	3816	3699
Equity MEUR	885	967	1298	1536	2402	2737	2571
Total assets MEUR	4031	4697	5522	7194	8730	8678	8651
Equity over assets	21,95 %	20,59 %	23,51 %	21,35 %	27,51 %	31,54 %	29,72 %
Gearing	355,48 %	385,73 %	325,42 %	368,36 %	263,45 %	217,06 %	236,48 %
Net Income over Revenues	1,64 %	5,00 %	4,69 %	3,70 %	5,33 %	4,67 %	5,12 %
Business Diversity Index	0,10	0,13	0,18	0,08	0,40	0,66	0,52
ROE %	13,90 %	37,33 %	35,90 %	30,34 %	31,77 %	30,58 %	36,48 %
ROA %	3,05 %	7,69 %	8,44 %	6,48 %	8,74 %	9,65 %	10,84 %
ROCE %	11,87 %	25,82 %	28,61 %	15,01 %	19,54 %	21,93 %	25,36 %

Table 5-10 Financial and BDI characteristics Centrica.

The change in business configuration reflected herein made it difficult to follow the evolution of the different businesses inside the company. This can clearly be seen between 2001 and 2002. Additionally, the decisions reflecting the internal distribution of profits impaired opportunities to carry out analysis over the entire period.

In terms of capitalization, the most striking feature is the large gap between total assets and total capitalization. Possibly in the balance sheet there are a lot of reservations, receivables and payables that do not bear interest. Of the total value of assets, the share of conventional capitalization is less than half. This has not, however, changed during the analysis period. The substantial gap between the return on asset, equity and capital employed reflects the share of non-interest bearing capitalization in the balance sheet. The increase in capital employed from 2001 to 2002 is reflected in as a dip in return graph.

Regarding the financial structure of Centrica with respect to equity over assets and gearing we can identify a trend line; a constant improvement of the financial structure from 1998 to 2004. With the exception of a few years, the share of equity in the overall capital structure has been increasing and gearing figure declining. For Centrica there was probably an optimum in the equity over assets figure, where with a constant profitability and cash flow the share performance will be optimal.

The business diversity of Centrica has developed favorably since 2001. The company managed to increase diversity by starting new businesses that provided growth for the company and reduced the dependence of one business area.

The last of the financial pictures illustrates the profitability of the company, i.e. net income over revenues. The figure throughout the analysis period is positive, although not very high. It is in the nature of trading-related businesses that the margins are not high, but the company is doing well if it consistently shows a positive return from your to year.

5.4.2 Historical narrative

The following table, Table 5-11, is prepared as an illustrative snapshot of the firm and its prevailing environment in the early 1990s and early 2000s. The key attributes characterizing the firm and the market environment are presented in the following Tables, namely Table 5-11 and Table 5-12. The next table, Table 5-12 illustrates the key characteristics of the competitive environment proceeding opening of the markets for competition.

British Gas / Centrica	**Early 1990s**	**Early 2000s**
Primary company	British Gas	Centrica
Power procurement, own generation, purchases	Vertically integrated national monopoly gas company. No power business	PPA:s, own generation, wholesale, balancing & RM at market
Customer base	All gas customers in UK	UK retail, wholesale, distribution, trading
Coverage of business chain	Vertically integrated national monopoly gas company	Gas production, generation, RM wholesale retail, distribution
Primary origin of growth	Organic growth first, acquisitions later	Expansion to competitive wholesale and retail markets acquisitions
Key risks in business model	Availability of production assets and customer risk	Regulatory risk, customer risk, market risk
Key strategic challenges	To build the infrastructure, foresee the forthcoming regulatory changes	Find growth opportunities, management of multiple risks
Diversification characteristics	Monopoly national business chain	Unbundled competitive business chain, functional SBU:s

Table 5-11 Characteristics of Centrica / British Gas in 1990s and 2000s.

	Early 1990s	**Early 2000s**
Key characteristics of market	Closed monopoly markets	Competitive generation wholesale and retail
Competition in the market	No	Yes
Form of transactions	Static conditions, wholesale and retail tariffs with regulatory review	Competitive pricing in wholesale and retail
Degree of market integration	High	Semi - low
Relationship between actors	Vertically integrated monopoly	Competitive wholesale and retail, multiple players
Cause of imperfect competition	Legal monopoly in gas and electricity	Competition, but number of players could be higher

Table 5-12 Characteristics of Centrica / British Gas markets in 1990s and 2000s.

The events included in this study go back to late 1960s but primarily the key sequence began in the 1980s. However, to understand the present state of the UK gas industry, a short review of the history facilitates better understanding. For this study these events add to the scene in which later events take place.

The origins of British Gas can be traced back to the Gas Light and Coke Company, which was set up in 1812 to supply London with gas manufactured by partially burning coal. Of the facilities operated by the original Gas Light and Coke the gas lamps around the Royal Palaces and Westminster are still in operation today, and they are still managed by British Gas.

In the early 1900s the gas market in the United Kingdom was mainly run by county councils and small private firms. By 1920 gas had become a major feature in British homes, through appliances designed for cooking, water heating and heating of living spaces.

Up to 1948 the gas industry in Great Britain was still run in much the same way as it had been for over a hundred years. Gas was manufactured from coal, an indigenous fuel and was supplied by a series of private and municipally operated gas firms. The 1948 gas act changed this by creating a nationalized gas industry throughout England, Scotland and Wales (**GA48**). Clement

Attlee's Labour government thus nationalized the UK gas industry and the 1062 privately owned and municipal gas firms were merged into twelve Area Gas Boards, each a separate body with its own management structure. Each Area Board was divided into geographical groups or divisions which were often further divided into smaller districts.

Surveys in the North Sea performed in 1960's had indicated that there were large reserves of natural gas in the North Sea (**NGDISC**). Thus in 1966 the decision was taken to convert Britain to natural gas and a year later the first North Sea gas from the West Sole field was brought ashore at Easington terminal. During a ten-year national conversion program every appliance in the country was converted from town gas to run on natural gas (**GASCONV**). Visits were made to 13 millions homes and factories and 34 million individual appliances were converted. This national conversion program was completed by 1977.

The 1972 gas act paved the way for greater centralization, with the creation of the British Gas Corporation (**GA72**). Taking effect in 1973, the 12 old gas boards became regions, responsible for a particular geographical area.

In 1982 the Oil and Gas (Enterprise) Act (**EGA82**) gave the government the powers to dispose of British Gas' assets opening up the corporation's pipelines to third party suppliers (**TPA82**). On 24 August 1986, some 38 years after it had been nationalized, it was decided to return the gas industry to private hands (**PRIV86**). On 8 December, 1986, £9 billion British Gas plc shares were floated on stock markets world-wide. As part of the policies of then Prime Minister Thatcher, the giant state-owned monopoly gas company was first privatized and effectively become a private monopoly in the residential market. The residential market was not open for competition and it was not perceived to be opened. At the same time, the legislation established the regulator, Ofgas (**OFGAS**), to regulate the industry and protect the interest of customers. Ofgas had two primary roles; one was to regulate the network part of British Gas so the company would not discriminate against competitors in the business market, the second was to control the regulated monopoly in the household market.

A part of the original transaction had been to introduce competition in the commercial business gas market, and British Gas was thus requested to reduce its market share (**MKTSRED**). This created an opportunity for newcomers to enter the commercial and industrial gas retail market. These newcomers consisted of different firms, regional electricity firms, upstream gas firms, and trading firms; just to mention a few (**NEWCOMP**).

In 1992, industrial and commercial customers using between 2500 and 25000 therms of gas per annum were given the opportunity to choose the supplier freely. A range of alternative suppliers entered the market.

The same year, British Gas called for a wide-ranging Monopolies and Mergers Commission (MMC) inquiry to balance the needs of customers, shareholders, suppliers and employees. When the MMC published its report in 1993 (**MMC93**), its proposals were rejected, but the government decided instead to open domestic gas market to competition by 1996 (**DOMCOMP**). In response to this proposal, British Gas carried out a major restructuring to prepare the UK business for the onset of competition. Five business units were formed.

The vertically integrated privatized gas monopoly company was demerged in 1997; the transmission activities were included under Transco and the British Gas' gas sales, services, and retail businesses, together with the gas production business of the North and South Morecambe gas fields, were demerged into Centrica plc (**BGRSTR97**). British Gas was to change its name to BG plc. An Extraordinary General Meeting that approved the demerger was held in February 17, 1997.

This demerger was a company-initiated decision and was not dictated by the government (**DEMER**). Basically, four causes could be identified for the demerger decision: due to the strict competition control exercised by the regulator, almost all benefits obtainable by working under one corporate control were already lost; the operational business culture for a network business and a sales business are substantially different; the development of share price of the integrated British Gas had been poor and in that light the demerger looked good; and finally the company had too much gas at too high a price so transferring the liabilities to one company would save the other.

As a result of this transaction, Centrica inherited a selection of businesses it would not necessarily have chosen. How the business portfolio was split between BG and Centrica could be regarded arbitrary, but Centrica had no influence on which businesses it would inherit.

In 1997, after the demerger, the main focus was on improving the financial performance of the company. The introduction of electricity sales was a key component because the electricity market had recently opened for competition (**POWSAL97**). Centrica decided to be the first mover and leverage its strong brand position combined with its trading and risk management capabilities. By May 1998, four months ahead of the first phase of domestic electricity competition in September 1998, British Gas had attracted over one million electricity customers

through an offer that, on an average, was 12 per cent below the prevailing price level. At the same time 120,000 had already signed contracts to buy electricity from British Gas (**CUSTSWITCH**).

In May 1999, Centrica acquired the British Automobile Association, AA. The reasons for this acquisition was to access an increased customer base through AA, and to have the ability to cross sell this way. Following the acquisition, Centrica had an expanded range of services, comprising three principal areas: home services and energy supply under the British Gas brand name, motoring services under the AA brand name, and insurance and financial services under the AA and Goldfish brands.

By July 1998, 4 per cent of customers switching gas supplier cited dual fuel (the capacity of the seller to sell both gas and electricity) as the main incentive. By October 2000 this figure had risen to 21 per cent. Awareness of competition was at 95 per cent and every month at least 300 000 customers switched supplier. Domestic gas customers had seen their total bills reduce by around £1 billion a year while customers switching electricity supplier had seen their bills fall by nearly £300 million.

In May 2001 Centrica acquired a 60 per cent share in Humber Power Limited which owned and operated a 1260 MW gas fuelled power plant in Stallingborough, North East Lincolnshire, providing Centrica with 750MW average power output (**HUMACQ01**). This was complemented in December by acquisition of Enron's former energy customer business and certain of its assets (**ENACQ01**).

Centrica had thus reached a position of the market leader in the electricity retail market, while retaining its strong position in gas. The two products complement each other, as the systems required for administration purposes are often the same.

Then intensity of actions of Centrica included in this research in the late 1990s, immediately after opening the market for competition, was at a modest level. More tangible actions had already begun in 1999 through acquisitions, and continued at an accelerating pace until 2002. In 2003 acquisitions were reduced to gain momentum in 2004. Throughout the analyzed period all other activities have been relatively modest. Strategic announcements, nominations and divestments have had a role, but they have never overshadowed acquisitions.

5.4.3 ESA of Centrica

The figure below, Figure 5.10 illustrates the events described above in a graphical form. The most striking feature is that at the beginning the interactive process takes place between the firm and legislative level. Before the establishment of the regulator in 1986 there was no energy regulator in its present sense. The role of the then prime minister, Thatcher, must be emphasized in this context as it was her government that set in motion the opening of the markets for competition. The original force that set the process in motion reflected the ideological concept PM Thatcher shared with US president Reagan of replacing governmental orders by the markets as a device to ensure good performance. The economic advice from the Austrian Economists was thus well received. Likewise, the personal political goal of PM Thatcher to reduce the power of the unions probably played a role in this context.

After the establishment of the regulator that regulator obviously could assume his or her regulatory role in the interaction between the firm and its environment, and thus the focal point of activities shifted towards interaction between the firm and the regulator. The firm initiated two investigations at the MMC that ultimately resulted in opening the final non-competitive sub-market, the residential market, for competition.

The complete opening of the market for competition caused the focal point of the action to shift from that between firm and the regulator, to that between the firm and its business environment. When the market is not yet open, or the process is still pending, a firm's activities could most benefit the firm if directed towards the regulator and thereby impacting the process and the anticipated outcomes of the process. As the overall framework for the firm to act had been set, the actions that could most benefit the firm could be directed to accommodating the firm to adapt to the changed environment, and addressing the competition.

The role of the interaction between the consumers and the firm is shown by customer switching. During the early phases of the process, Centrica was forced to reduce market share in various component markets, but each individual switching decision was obviously carried out by an individual customer. However, the interaction between the customers / voters and the government is not well documented. In the late 1990 Thatcher's political support within the conservative party had declined to such an extent that it effectively encouraged her to resign from the post of PM. Possibly, this deterioration of support within the party reflected the deterioration of her support among the greater public.

An impact arrow from the TPA legislation of 1982 to the transmission network access directive of EC in 1990 is included in the figure. The data available did not provide clear evidence of this link and thus it is marked with a dotted line. However, timing wise the introduction of the UK legislation could have provided the initiative for the EC directive, and the UK politicians could have provided influence to introduce the community directive. In any case the development of the UK market took place at an earlier stage compared to the rest of Europe. Thus the UK development could have been a model for rest of Europe.

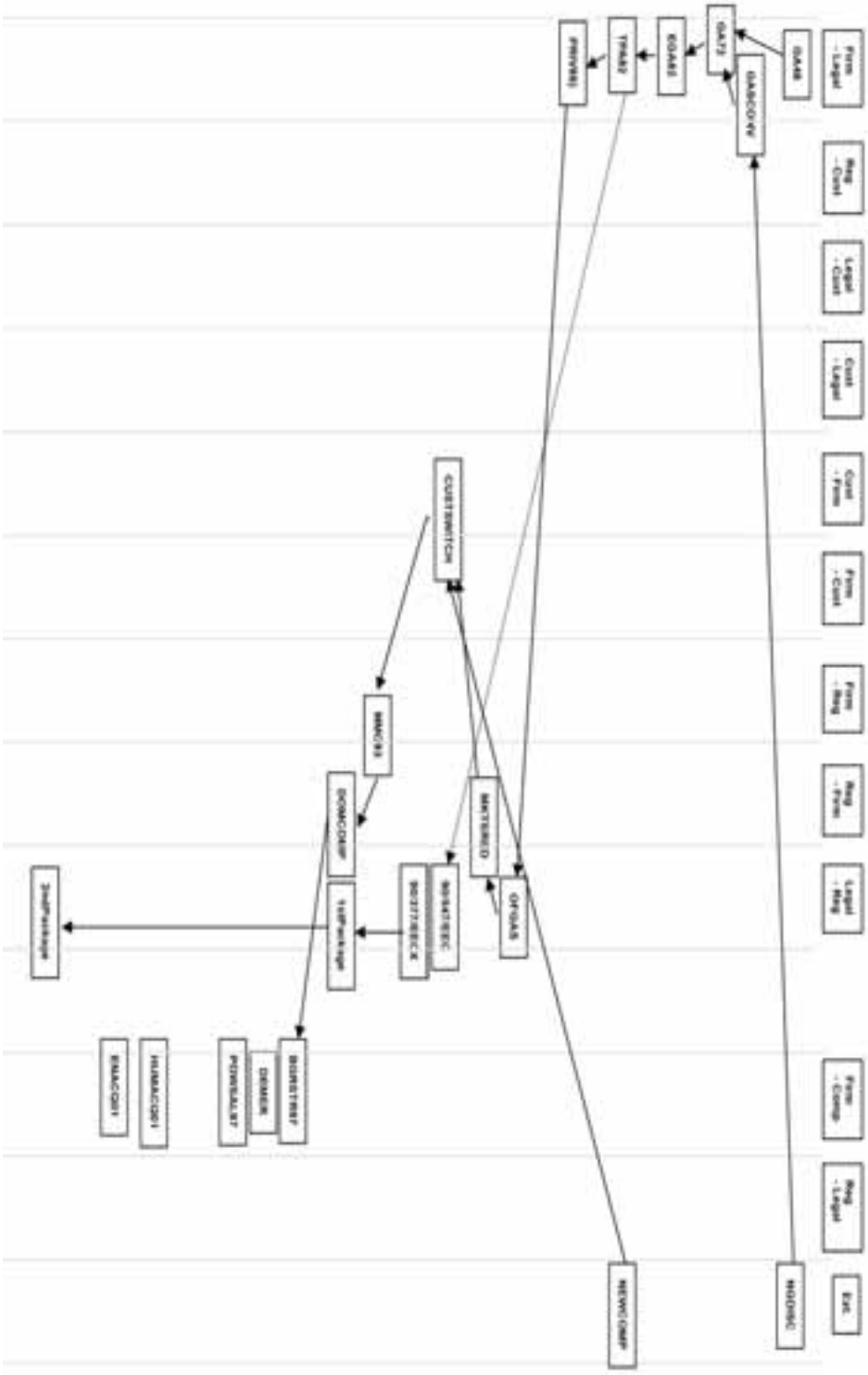

Figure 5-10 ESA of Centrica.

5.4.4 Analysis of Centrica initiated actions vis-à-vis market opening

The actions discussed above are in the context legislator-regulator-firm customer. In the following the company actions are discussed in the market context; i.e. primarily between the firm and the market place. This context falls outside the context as discussed above and thus complements the analysis with a different perspective. The following figures illustrate the actions of the company vis-à-vis changes in the market place. The actions have been divided into eight categories. Subsequently the company-initiated actions have been used to calculate the CTI.

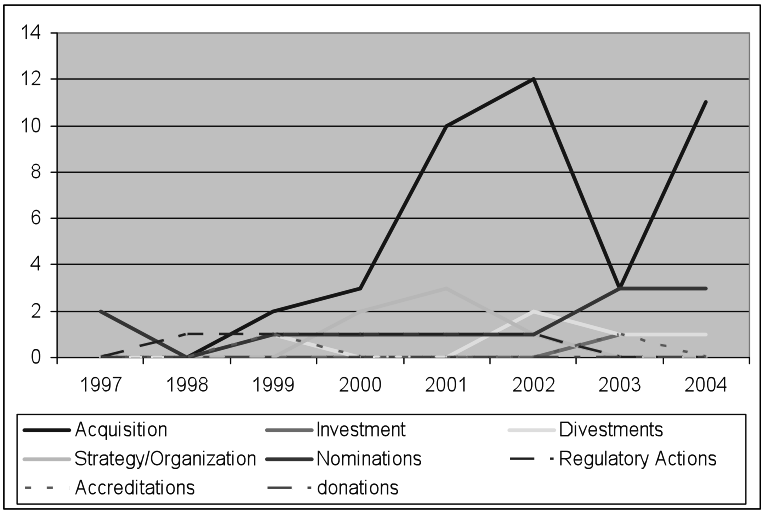

Figure 5-11 Classified actions of Centrica 1997 – 2004.

The action portfolio of Centrica in the 1990's was not dominated by any form of activity. Only in the early 2000s did the acquisition wave take off. This was simultaneously accompanied by strategy and organizational announcements. Thus, it was primarily acquisitions that changed Centrica.

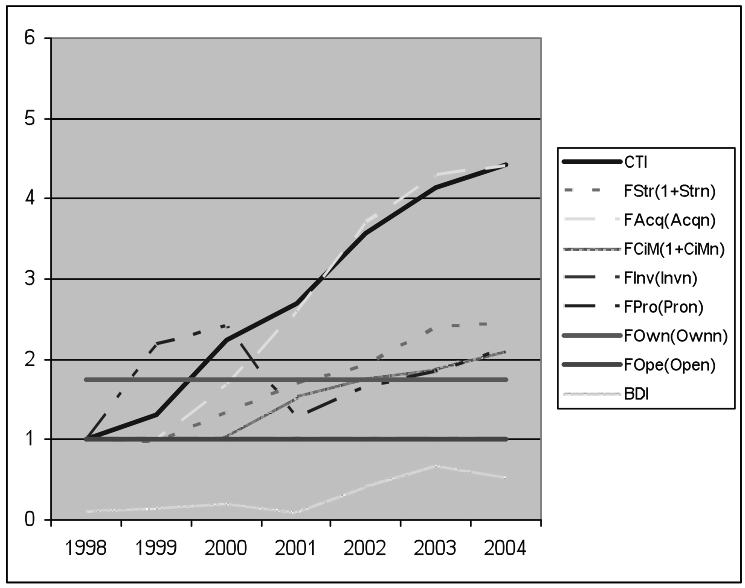

Figure 5-12 CTI and component indices Centrica 1998 – 2004.

Analysis of the CTI further illustrates the position of acquisitions with regard to the changing of Centrica. The overall change is relatively modest; the main contributor is acquisitions, complemented at the beginning by profitability increments.

6 ASSESSMENT OF THE DYNAMICS IN THE ENVIRONMENT AFTER MARKET OPENING

In this chapter I discuss the characteristics of the operating environment of the firm including an assessment of the characteristics of the interaction framework preceding the market opening. This is intended to lay a foundation on which the subsequent changes are based as the markets are opened for competition. The discussion is organized so that it begins with a description of the interaction between the firm and the customer market. This is followed by a description of the interaction between the firm and the regulatory judicial environment. The interaction between the customer-voters and the political environment is covered in the discussion regarding the political intentions and characteristics of the process itself. The outcome of this process sets the scene from which the firms may take action. This leads to a discussion of the characteristics of the dynamics in the demand, the competitive and political regulatory environment, with a discussion on the subsequent impacts on the firm strategy and structure when markets are opened for competition.

6.1 THE FIRM / CUSTOMER MARKET INTERACTION PRECEDING MARKET OPENING

The prevailing business environment prior to the market opening was often a regulated monopoly. In this environment all the costs of conducting business were carried through to the consumer. The price of electricity for different consumer categories did not necessarily reflect the cost of supplying electricity to that particular consumer group, but the prices for different groups could include some degree of deliberate cross subsidies. The incentives to optimize the cost structure were small. The regulator controlled the prices / rates and thus the total level of service cost had to be approved ex ante by the regulator. Consequently all rate increases had to be approved by the regulator before they could be implemented. The regulatory traditions of the prevailing jurisdiction had an impact on how easily and fully the rate increases were confirmed by the regulator.

This pattern, but with local characteristics, has been applied under all analyzed jurisdictions. The following statement from one of the interviews characterizes the decision environment at the regulated phase: "*The fact that if you went in, and on a good cause basis, and decided to spend money to build a power plant, then you did not need that (power plant) and you recovered that (expense)*". The business risk was practically eliminated; all expenses could be recovered and there were very little or no incentives for the firm to be efficient. Only when the firm did not manage its business properly, and the quality of service was poor, could changes be induced from the outside.

As there was no competition in the retail of electricity, and practically nothing in the generation market, the business environment could be regarded as relatively stable and predictable. The absence of competition in the industry was often reflected in the attitude of firms towards each other in same market. There was a lot of co-operation, even in the field of marketing. There was co-operation between the firms in the development of common marketing campaigns, common marketing publications for the general public and co-operation in educating the customer in the economical use of electricity and gas. This friendliness between the firms prior to opening the markets for competition could possibly have constituted an inhibitor on the path towards competitive markets. The industry people that had been on friendly terms with each other, even sharing marketing-related data, were not tempted to start competing with each other.

The overall size of the market, the geographical distribution of customers and distribution by segment, and the possible presence of major customers, all contributed to the overall attractiveness of the market. If it was the case that the market was more attractive, it would more easily attract competition after it was opened. Large customers were especially lucrative targets and thus promoted the introduction of competition. The other general aspects of the market that shaped the competitive landscape were the overall effectiveness of the structure and the degree of integration in the value chain.

If the value chain prior to market opening was vertically integrated, i.e. there was one company that controlled the entire value chain from generation to retail, the formation of a wholesale market for sourcing and risk management purposes asked for cutting the value chain into pieces and establishment or facilitating evolution of independent actors vertically. In addition, in the retail part, unbundling distribution from retail needed to be carried out.

Structure of supply, supply balance, interconnections and distance to other markets impacted the ease by which actors from outside the market took a position in the market. In the case of an

island market, the generation and consumption would need to be in balance, without any opportunities to bring in power, capacity or backup from outside.

Had there been in the pre-market opening environment, distortions in pricing principles or the actual price level in form of possible pricing flaws or hidden cross-subsidizations, these could have generated interest with new actors wishing to penetrate the market. In the UK, there was a substantial bubble in the pricing structure resulting in an excessive level of the price for the consumers. Centrica, a company with a history in the gas business, saw this opportunity and based on its risk taking ability, sold itself short in the market place providing the consumers with substantial savings compared to the prevailing price level; thereby they managed to subsequently reach the market leader position. Clearly, Centrica took an enormous risk, but the risk-taking rewarded the company as the overall market price level fell just as the company had predicted.

The traditions of the market regarding the way it reacted to new entrants, and the way the cultural profile of the newcomer was perceived in the new market, was sometimes an issue. These irrational aspects, such as the way consumers saw non-traditional suppliers, could impact the ability of newcomers to solidify a position in the market. For example, Vattenfall stated that: *"In Norway we worked for some time, but it never became a success so we decided to step out. Maybe the reason was that we were never accepted really in Norway"*.

6.2 INTERACTION BETWEEN THE FIRM AND THE REGULATORY JUDICIAL ENVIRONMENT PRECEDING MARKET OPENING

In the United States the Constitution defines the division of powers between the states and the Federal Government leaving the Federal Government with very little authority over issues within an individual state. Thus, the market opening for competition within the states fell within the powers of the states, and the Federal Government could not accomplish a nationwide process, even if there was the will to do so. The only market in which the Federal Government had jurisdiction was that of interstate commerce, i.e. the trading of gas and electricity over state boundaries. In Europe, although the EU is a union between sovereign independent member states, EU legislation is binding on all member states, and they are obliged to include EU Directives into the national codex. This differing approach could be seen in the way the Energy directives for electricity and gas that all member states were obligated to follow was actually passed. Not all member states implemented the directive at a symmetrical pace in their national legislation, leading to dissimilarities between member states.

Another source of differences is the overall structure of the judicial system; i.e. the differences between countries that adopt common law and those countries that only have Written Law**.** These differences resulted in dissimilarities regarding the ways that structural changes in the energy markets could be realized. In case a firm was active under several jurisdictions, it could use these differences for its own benefit, and place the production facilities and market presence under beneficial jurisdictions. One further source of differences related to jurisdiction was the enforcement powers of the authorities. In case the regulator lacked enforcement powers, or had to act through the courts, enforcement was much less efficient.

Centrica initially had a negative attitude towards the regulator and the regulator had a negative attitude towards the firm. The Nordic firms, Forum and Vattenfall had a pragmatic approach to the process of the introduction of competition, while the US utilities, in general, tried to steer the process to their benefit.

If the attitude of the firm towards the regulator was important, even more important was that of the regulator towards the firm. This was reflected in how the regulator approached the firm and what role the regulator considered to be fit for the firm. One extreme was that the regulator saw its role to be to set the general framework to regulate the entire business, and the other would be to see itself as only acting as a consumer advocate, with the intention of pressing to keep the prices down. The regulatory philosophy of permitting the price signals to go through from wholesale market to retail market and visa-versa enabling thus the actors to make investment decisions based on the correct price signals the regulator would have a more constructive role. These attitudes are illustrated in Figure 6-1. In this figure Ce stands for Centrica, Co for Constellation, F for Fortum, and V for Vattenfall.

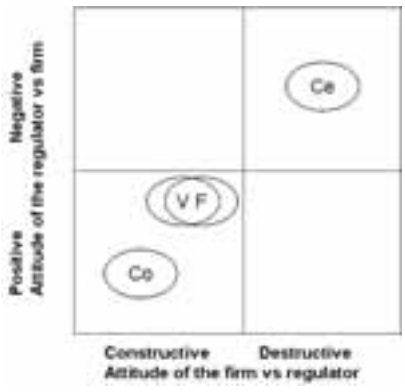

Figure 6-1 Regulator attitudes vs. firm attitude in case firms.

A factor related to the previous issue was the tradition or history as to the extent there could be discussions between firms and the regulator, and to the extent that these discussions were mutual or unilateral. The regulatory process in the UK reflected a unilateral approach, whereby the regulator formed the regulatory environment without too much discussion with the then British Gas. A cause for this could have been the fact that there was practically no experience of opening energy markets for competition, so the process had to be improvised. Whereas in the Nordic area, the process could be characterized as smooth and carried out through mutual discussion, and trying to understand and listen to the other parties' position. In the US regulation had been present in the energy business for a long time, and lifting the regulatory barriers was a new feature.

In a market environment, where competition is introduced after long period of monopoly, the idea of adaptation to the forthcoming new situation will be painful for the firms, or at least they often perceive the new situation as painful. Bonardi (2004) studied the global and political strategies of deregulated industries, and found that former monopolies are often considered as perfect examples of firms using defensive political strategies to their advantage. In the firms with a long monopoly history, the governance structure and operational patterns have been developing as a result of the long monopolistic history, and they are easily tempted to pursue political strategies to shape the forthcoming actions of the regulator so that this could be stopped altogether, or the competitive future would be shaped in their favor. Sometimes these actions are justified, as the substantial structural changes in major corporations are not easily accomplished – unbundling, divestments, changes in operational structures, and reductions in workforce are often not easily realized, and long transitional periods could thus be justifiable.

However, the objectives of these political strategies are not always easily obtained. The regulator could pursue its own strategies that originate from a superior body, or the political agenda presented to the regulator. A coordinated co-evolutionary development path, however, will produce the best results, because the firm exists to provide a service for society, and thus the policies of regulators should not be conducted in contradiction with the interests of the firm.

6.3 CHARACTERISTICS OF THE FIRM PRIOR TO OPENING OF THE MARKETS FOR COMPETITION

The characteristics of the dominant firm in the market, such as positioning along the value chain, degree of market dominance, overall strategy, size, business diversity, characteristics of the

management, ownership structure and competitiveness, were different. These could all impact the readiness of the firm to face competition. Brand position and the overall reputation of the firm in the market impacted its readiness to face competition. The financial characteristics, i.e. profitability, financial leverage, liquidity and the strength of the balance sheet, could all have an impact.

Prior to the market opening most firms lived protected life under the monopoly. The only risks they faced were related to operative and regulatory aspects – price did not pose a threat to the company. According to most informants interviewed, the attitude of firms towards risk was one of the most important factors the firm needed to change. During the monopoly period the firm had been able to recover all costs from the market, but after the market opening it was no longer achievable. Instead, the firm needed to always consider what cost level was acceptable, and what risk level was acceptable.

The firms could find it hard to adapt to new technical challenges or diversify to new markets (Malerba, Nelson, Orsiegno and Winter, 1999). The firms may stick to their history without recognizing the impact of the changes in the environment to their business base. This could be especially valid for static business environments, like pre-deregulation electricity business.

The pre-deregulation strategy of the firms was primarily determined by the business environment; whereby the firm was active and thus quite different between the various distinctive groups. For the US utilities, the origin of the firm was as a regional vertically integrated monopoly with generation, transmission, distribution and retail. Constellation Energy was originally the utility company in Baltimore (Baltimore Gas and Electric, BGE). Owing to the nature of the structure in the Nordic component markets, the origin of both Vattenfall and Fortum/IVO was in a national wholesale electricity provider, with a modest presence in the retail market and a substantial role in high voltage network operations. All firms were active under the non-competition umbrella; they did not have to face competition, and the business risk was transferred to the customers. The risk elements facing the firms were operative risk at the plants and regulatory risk.

Due to structural causes, all firms were profitable and competitive in their own area and their size was determined by the characteristics of the market. Because prior to market opening all firms were active under a non-competitive environment, firm competitiveness after market opening depended on an array of characteristics; such how well the firm had managed to benchmark its cost structure against the industry and how well the management managed to

streamline the possible flaws in the operative structure. Business diversity was essentially determined by the characteristics of the business environment, and there was not too much room for diversification outside the core business. The position on the value chain was also determined by the environment, and there was not much room for maneuver. The US case firm was publicly owned while the stock of the Nordic and UK case firms was held by the state.

All the firms had a substantial customer base prior to market opening, either directly or via captive retailers. With the exception of Centrica, which was primarily a gas company, all firms were power companies prior to the market opening. However, Centrica had a substantial gas customer base that it could use to build up the electricity business. Centrica had a "home base", with customers to whom it had been supplying gas over a long period prior to the deregulation.

All the firms had a strong balance sheet, which provided a solid financial standing in combination with the ability to transfer all risk to the customers and cover all investments without financial risk. The lending rate for a monopoly utility company would be low and obtaining funds for investments would be relatively easy due to the low risk of the business. For Vattenfall, prior to 1992 this was even easier due to the fact that it was incorporated only 1992. Prior to that time it was directly part of the organization of the Kingdom of Sweden.

Sometimes the firm under a monopoly umbrella could be charged for obligations that such a firm would not have under normal business circumstances. These obligations can relate to a requirement to sell at a discounted price to a certain customer group, electrifying an area with low consumption, paying extra dividends for the owner, or otherwise being abused by the owner or the government.

6.4 POLITICAL INTENTIONS SUPPORTING THE MARKET OPENING FOR COMPETITION

The original intention or vision of what was desirable or could be achievable through deregulation or introduction of competition in the electricity market varied greatly between markets. In the EU the vision to have common markets in Europe with free movement of goods, labor, capital, and services towards *"promoting the harmonious development of economic activities, continuous and balanced expansion, increased stability, a rapid rise in living standards and closer relations between its' member states"* had been pronounced clearly, originally in the Treaty of Rome, but repeated later in other documents.

In the United States the concept of competitive markets and free enterprise was often referred to as an essential building block of society. However, the grand scheme of wholly opening the electricity markets for competition was actually never defined as a Federal objective, even though the actions, especially by the Federal Energy Regulatory Commission, had been consistent towards this goal. The means available for the FERC were, however, limited, primarily due to the lack of jurisdiction of FERC over the state's internal matters, and secondarily the lack of political determination at a Federal level. Within the states, it was the different Commissions that had full jurisdiction over these matters. As a consequence, the pace of market opening varied greatly and in California the process, although introduced with determination was subsequently halted, presumably until 2018. The process could be different between the states due to different causes, but the primary causes for the differences could be dissimilarities in political intentions pursued by the initiators of the process and political strategies pursued and the incumbent utility firms throughout the process.

In the US, gas business competition has been implemented for many years. Gas was often produced outside the state in which it was consumed and thus subject to FERC regulation. On the other hand, electricity the production and consumption took place in the same State, leaving the FERC without any jurisdiction over the regulation of the business.

In the case of California, the intention was clearly to have a competitive electricity market in the state. However, the mechanism set up to reach this goal was so flawed that it was almost bound to fail. Capping the retail rates and letting competition set the price in the wholesale market cannot be regarded as a balanced approach to an open the market. Sempra characterized the process as: "*The philosophy behind all this was that the customer should pay what the true cost was. There should be some volatility in retail prices to change the demand. When they did it [the system] they never envisaged that the price would go above 6,5 ¢[/kWh]. They thought that for the utilities the customers would see the actual cost of energy, and it would never go above 6,5 ¢[/kWh]. The cap would give you the headroom and it would not be a factor in terms of actually controlling prices*". In real life the wholesale prices climbed well above the expected maximum of 6,5 ¢ and reached the level of 17 ¢ / kWh. So, because retailers were permitted to sell power at 6,5 ¢ to their customers and they had to purchase the power from the wholesale market for 17 ¢, it was clear that nobody could continue on that path for long. As a result, one of the three utilities went bankrupt and the State of California rescued the utilities by starting to purchase power for them. At the same time, market opening was cancelled with a few exemptions, and the prevailing situation will possibly continue until 2018.

The emerging of the PJM market into the present state was an example of a process not directly steered by political decisions. Some utility firms in the PJM area had, in the 1920s, already made the decision to connect their networks to gain backup generation and security of supply. Later, the operational cost optimization made available by common dispatching in the PJM area had become more important. The states made separate decisions to open their respective markets for competition, but the mere emergence of PJM as a market place and an ISO was not a result of these decisions. Rather, it was a market that had grown from the need to obtain backup generation capacity into a comprehensive power trading market with sophisticated hedging features. Phil Harris, the president and CEO of PJM at the time stated, that PJM tried to create solutions that would benefit everyone and promote the interests of the whole industry. In the case of PJM the initiative to form a competitive wholesale market emerged from within the industry, while the political incentives and guidance were limited. Furthermore PJM was used by the FERC as a good example that could be copied by other markets. PJM membership was voluntary and the participating utilities gave up their sovereignty to obtain the economic benefits achievable through coordinated central dispatching.

In the Nordic market, the introduction of competition started in Norway and later spread to the neighboring countries. The fundamental concept behind market opening was the political determination to promote the interests of the consumer and increase the efficiency of the industry. Later the EU directive repeated this need to open the market for competition, but the Nordic area had been well ahead of the overall European schedule. Although not every company was confident of the importance of opening the market for competition, it was generally carried out with good common understanding. In each of the component markets in the Nordic Area, the incumbent firms pursued political strategies at the time of the introduction of competition. In the Nordic and UK markets the role of Enron as a promoter of competitive wholesale market must be emphasized. In the US, the role of Enron cannot also be ignored. They were active at the Federal and state level wherever the competition in the energy market was deemed achievable.

In the UK, the market opening, beginning with the opening of the gas markets was the result of an ideological drive of Prime Minister Thatcher. Her intention was to privatize the industry and at the same time make the markets competitive. One could even state that the campaign of Mrs. Thatcher was a political crusade against forces in society; including the unions whom she regarded as counterproductive.

The matrix forming the array of political motivations behind the deregulation varied from case to case and was almost always different. However, the outcome of the process was not always what

was intended, and by subsequent corrective actions set in movement and fuelled a co-evolutionary process between the firm and the environment. Not all of the political intentions were always pronounced, but they could contain aspirations by the political initiators and the incumbent firms that were not documented.

6.5 CHARACTERISTICS OF THE MARKET OPENING PROCESS

The characteristics of the market opening process consists of two areas: Background / motivation and the Process itself. The background factors include the initial spark to begin the process, a pronounced and silent political agenda including its clarity, the role of regulator to regulate or to press price, and finally resourcing of the regulator to prepare and implement regulation in the then regulated part of the business.

In the process itself there are several factors that can have an impact on the outcome. These could be the characteristics of interaction between the parties during the process, the breadth of the process (which firms are included), and how broadly the market is influenced. Further characteristics that may influence the outcome are, what steps are included and the actual steps (unbundling, ISO, forming of forward markets etc), how the process is managed, how the trend is maintained (orientation and goal of transition, and is reiteration permitted), treatment of stranded assets and liabilities, and the possible distortions in rent distribution. The smoothness of transition, requirements relating to corporate governance, favorability of legislation impacting the process, and ultimately the schedule of implementation, can all impact the outcome. In addition, the balance between wholesale and retail plays a role in the process. On top of all this, the authority of the regulator and the ability of that regulator to enforce decisions will have an impact on how the process succeeds.

The traditions relating to the way society operates differ substantially between societies and markets, and are reflected in how the market opening process is handled. It is relatively clear that all parties could benefit from the process of market opening if it is carried out in co-operation. The UK and California cases represent a process whereby the political intentions in forming the regulatory process and overall rules, and the reactions of firms towards it, created an environment that could even be called “hostile”. In the case of Centrica, the regulator was created at the same time as legislation to privatize the former British Gas was passed in 1986. Not earlier than in 1993-1994 did the new chairman recreate a positive attitude within the

company towards the regulator, and fully accepted competition to be a fact of life: "*The competition is here to stay and we just have to learn to live with it and if we are not going to live with it we will not survive. You have to take competition as a fact of life and learn to be much more efficient and dynamic"*.

The CEO[54] of Exelon stated during interview: "*Initially competition got shifted the balance towards the customers. Most utilities were able to work out transition arrangements that kept those shifts from being destructive to shareholders*".

Regarding the California process, the COO[55] of Sempra stated: "*The creator of the crisis was the disconnect between the two (wholesale and retail market)". "It was totally a flawed design; you cannot have deregulation and have capped retail rates that are supposed to change your demand side equation and have uncapped wholesale rates so there is no demand response at all as there are no price signals given to the customers". "The utilities had requested the approval to be able to enter into long-term contracts or to hedge their portfolio so that if you have a 6,5 c rate cap to hedge so that you knew that the wholesale cost would be capped at 6,5 c or less. The Commission had not authorized the utilities to do either of those things. The commission required that the utilities could only buy at the power exchange on an open competitive wholesale market and could not hedge and could not enter into long-term contracts". "The philosophy behind all this was that the customer should pay what the true cost was. There should be some volatility in retail prices to change the demand. When they did it [the system] they never envisaged that the price would go above 6,5 c. They thought that for the utilities the customers would see the actual cost of energy, and it would never go above 6,5 c. The cap would give you the headroom and it would not be a factor in terms of actually controlling prices"*.

Strategy VP of Constellation stated: *"but I think the market risk everybody underestimated was that once then plants were no longer protected by regulation it became pretty much a commodity business like so many other businesses that handle commodity". "In the past you go back, say 25 years, the meeting with the regulators was more a formal presentation and discussion and you would give some philosophical statements and say directly here's where the company is going. Now you are in every state saying here is our suggestion how you change this market and there are people on the other side who are against this idea so it is polarized in different positions. That is what we see more today and the ability to effectively manage this state by state*

[54] CEO = Chief Executive Officer
[55] COO = Chief Operating Officer

regulatory compact [and] thus to change and create markets does create us the ability to make money".

Exelon's statement: "*They kick you like a football",* perhaps characterizes the frustration sometimes felt by the utility firms at the time of the regulatory process.

The statements described above could be plotted in a matrix in which the dimensions are home market / new market and actions initiated by company internally / externally. Plotting the actions accordingly yields Figure 6-2 below.

Figure 6-2 Internal and external initiated actions of the company prior to market opening.

In the environment of a traditional utility company, characterized by a generally predictable development, low level of competition and regulatory control but satisfactory level of earnings for the incumbent, the initiator for changes can be either the company or the regulatory environment. The actions were related to the home market where the company was active. Technical change, or any other externally initiated force would introduce the change element, but the company would be able to channel the efforts to its own benefit.

6.6 CHANGES IN DEMAND CHARACTERISTICS

Here, the primary focus is on electricity retail and thus the characteristics of the wholesale market are omitted. Of all the analyzed markets the wholesale markets had been open for the longest time, and had the most customers and thus had already utilized the opportunities that the open markets provided.

For the case firms in this research the introduction of competition did not have an immediate impact on demand. One could expect the price elasticity of demand to be negative and thus any decrease in price should result in an increase in demand. However, in electricity the decline in the electricity price did not cause an immediate reaction in the market. Electricity could replace other primary energy sources for the medium to long-term, but immediate reactions were often not substantial.

The increase in demand could be seen as a result of the actions the firms took in trying to enter new geographical and product markets, and not so much in customers demanding more electricity because of its lower price.

In Norway and Sweden the residential retail customers were more likely to change supplier than in Finland. A possible cause for this was that the average demand per customer was higher in Norway and Sweden than in Finland, due to higher share of electricity for heating living spaces. Higher consumption levels seem to be positively correlated with incentives to switch supplier. This could be stated as well so that higher quantity demanded would yield more savings incentives for switching the supplier.

One change in the demand characteristics was the increase in the multiplicity of contract offering. Various fixed price contracts, hourly variable prices and green power contracts began to emerge in the market place. This was, however, primarily caused by product development by the retailers, and not so much based on the demand by the consumers.

6.7 CHANGES IN COMPETITIVE CHARACTERISTICS

Centrica experienced market deregulation two times. The company was originally the incumbent monopoly gas company that was subject to the introduction of competition in its market and the obligation to reduce market share in those markets. The second time Centrica went through the introduction of competition the company was making inroads into a new market and product area.

Originally, in UK the introduction of competition and the establishment of a regulator were carried out at the same time in 1986. The regulator came with two primary roles. One related to the business market;[56] to regulate the network part of Centrica so it did not discriminate against competitors. The second was to control the regulated monopoly in the household market. It should be pointed out that in 1986 only the commercial and industrial (C&I) markets were opened for competition, while the residential market was to remain a monopoly supplied by Centrica.

The market share development in the UK gas market after opening the market for competition, and the overall development in the market is described by Partanen (1998). By 1997 Centrica's market share had fallen in the competitive sectors so that among large industrial consumers the Centrica market share had fallen to 15 per cent and in interruptible gas market to 11 per cent. The overall market share of the firm had declined from 100 per cent to about 50 per cent as a proportion of the total market, including industry, domestic, commercial, and power production, and the so called others.

After deregulation of the retail gas market in 1986 the upstream gas producers, traders, and marketing firms started selling gas to Centrica's customer base. Likewise, the electricity firms began cross-selling gas to their customer base. The idea to begin cross-selling electricity was really not very far fetched. A main structural difference between electricity firms selling gas and Centrica selling electricity was that Centrica was a company with a national brand, while the regional electricity firms only had brand recognition in their own marketing areas. The electricity firms' gas selling activities had taught customers the concept of buying several energy products from a single seller, so Centrica's entry to the electricity market in 1998 was not perceived as anything extraordinary.

A feature that made Centrica's entry into the electricity market interesting was the fact that the firm did not possess any generation assets. Nor did it have sufficient volume of power supply contracts to backup its sales efforts. It was practically selling itself "short", thus taking a sizeable risk by offering a 12 per cent discount to residential customers, compared to the prices of the incumbents.

This discount resulted in a very rapid growth in number of electricity sales contracts. The reason why Centrica took this chance was the belief that the prevailing price level on the electricity

[56] Commercial and Industrial market, often referred to as the C&I market

wholesale market was inflated, and it would not be sustainable for long. Had this view of the market prices been false, Centrica would have had to bear the financial consequences.

About 8 years after market opening, Centrica had become the market leader in retail electricity with 6 million customers. To cover its power needs the company acquired generation assets and secured the sourcing position by PPA:s (Power Purchase Agreements).

At the opening of both the UK gas and electricity retail market for competition, the key areas to providing competitiveness were the large customer base, combined with the ability to perform the administrative tasks of customer management efficiently; this was a key asset in entering a new product market. National brand position helped Centrica to obtain a role in the electricity business and finally the distortions in market price discovery mechanism combined with the risk taking ability prepared the way for success.

In 1995, at the time preceding the opening of the Swedish market for competition a Swedish consulting community, NUTEK prepared a study on the expected impact of opening the Swedish market. The company used examples from UK, Chile, Norway and Argentina. The study suggested that the expected outcome of market opening would be, first an increase in the number of competitive suppliers, followed then by a decrease a few years later. Secondly, they expected the margins associated with the retail to be reduced, leading to consolidation of the market. Subsequently the firms would segment the market more carefully, and concentrate on the activities they do best.

The image painted by NUTEK appears to have been quite accurate. At the time of market opening, many firms started to expand their marketing organizations believing that the marketing of power to customers would become the key issue in competitive markets. The firms did not realize that by splitting the overall electricity price to two components, the commodity price and the transmission/distribution component, meant that each part should carry its cost and show profit. As, by definition, the commodity element becomes competitive, the associated margins quickly melted away. Thus one key learning point for Vattenfall, and for many other firms, was that it is not the marketing of power that will provide highest margins.

The margins in distribution were regulated and not very high. Fundamentally, key margins could be earned at generation combined with the entire value chain through continuous cost optimization and attention to risk management.

The characteristics of the retail electricity commodity market began to resemble banking, whereby only the interest differentiated the banks. Correctly timing the purchase decision could, however impact significantly the overall cost.

Immediately after market opening in Sweden there were alternative suppliers. Statoil marketed power at their gas stations, and different unions tried to sell electricity to their members. Statoil had a substantial customer base, but obviously the organizational structure was not well suited for this particular business. The systems used at customer administration were not especially well supportive to the activity. Statoil were not effective enough and had to withdraw from the market, selling their entire customer base.

6.8 CHANGES IN POLITICAL OR REGULATORY ENVIRONMENT

The interaction between Constellation and its environment can be characterized by the company having a long experience in working under regulation. The company and the commission fundamentally knew how the regulated business functioned and despite changes in the details the fundamental undercurrent remained the same. Although the wholesale market had already seen competition for some time, most of the retail customers were not aware of the opportunities. The US special two-tier regulatory structure obviously had a limiting impact on how the company could operate and how it could be organized. Operationally it eliminated the opportunity to create certain cross-functional activities within the company.

Immediately after opening the gas market for competition Centrica behaved as if nothing had changed and found it difficult to recognize the authority of the regulator over its activities. As such, the situation was new for both Centrica and the regulator, and much of the confusion could have originated from this fact. As a result of this the company was taken to the competition authority several times. However, only as at early as the 1990s did a new chairman come from outside the industry and make the company change its attitude towards the regulator. His message was that competition is here to stay and Centrica just have to learn to live with it or it will not survive. Centrica had to “take competition as a fact of life and learn to be much more efficient and dynamic”.

The key process in the market was the unbundling of the former British Gas into Centrica and Transco in 1997. This process was a deliberate decision to demerge, and was based on business logic.

In the Nordic area the regulatory logic seems to be consistent. The opening of the markets for competition was a straightforward process and was followed by a political environment that supported the new competitive business pattern. In all Nordic countries the politicians acknowledged that competition would be beneficial for society as a whole and thus did not object with the concept of creating a common Nordic wholesale market place.

6.9 FIRM STRATEGY AND STRUCTURAL CHANGES

In the common Nordic market the unification of the wholesale market released much reserve capacity because every country did not need to arrange their own reserve capacity with regard to generation, but they could be pooled together. This pooling had indirectly caused an increase in generation capacity because the overall generation resources could be used more effectively. Owing to pooling of generation resources and market-based price discovery, the price of electricity better reflected its real value.

Prior to opening the markets for competition the incumbents were often generators, wholesalers and transmission grid operators. The immediate reaction by the incumbents after the retail market opening was to solidify the position in the retail markets. Most firms pursued this by implementing a wave of acquisitions. By these acquisitions the firms obviously intended to obtain a more balanced position between the upstream and downstream markets. Apparently, there was a common belief among the incumbents that the retail function would capture a major part of the value added along the value chain. However, the firms' views on where along the value chain the margin could be made shifted over time to reflect more closely the invested capital and risks that exist along this value chain. Obviously, the convergence of the regulatory framework unified the industry's view of the value added distribution. Thus as the NUTEK study proposed, the various companies active in retail after market opening seemed to follow a similar strategy.

Fortum's acquisitions in Sweden and Vattenfall's acquisitions in Finland after the opening the markets subsequently become key components of the firms. However, many of the acquisitions by firms from outside the Nordic area have been further sold to new owners. Clearly, these investments could be regarded as strategic temporary investments by the acquirers because realizing the economies of scale becomes harder with increases in geographical distance.

However, this acquisition wave has, since the early beginning, become much quieter. There are no longer interested sellers, and the incumbents cannot continue their wave of acquisitions without hitting the market share cap. After initial euphoria major newcomers have not shown interest in obtaining a position in the Nordic market. The introduction of hourly metering capability could potentially impact this further.

There are issues impacting the producer's freedom to choose their strategies. The Kyoto restrictions, for example, will have an impact on different actors' ability to take action. How the emission reductions will be allocated to firms in the future is still an open question.

The development of Fortum cannot be analyzed without taking into consideration the merger-demerger process that took place parallel to the opening of the markets for competition, and the company's interaction with the markets and the regulator. Clearly the focal point shifts away from being between the legislator. This is different from the other cases because in those other cases the focal point shifted to interaction between the firm and the customer.

The company did not have prior experience of being a regulated energy company although pricing decisions had to be approved ex ante. Demerging the wires business from the generation and sales business and finding the new business logic in the demerged company took some time. In addition, the regulator was a new function and creating the operational procedures between the regulator and the firm took some time and effort from both the regulator and the firm. A chapter that still needs to be written in the synopsis is the increased activity of the customers in requiring more from the suppliers.

In the case of Constellation / BGE, the company had captured two identities, the regulated BGE and the non-regulated Constellation. The firms belonged to the same corporation, but had quite distinct profiles. This was a result of a two-tier regulatory framework. The fact that the generation assets were transferred to Constellation and the characteristics of the local network provided locational cost benefits remained a source of competitiveness. On the financial side both firms issued their own debt, while it was only Constellation that issued equity. Operationally, the firms could not have much in common. However, the fact that the BGE generation assets were transferred to Constellation and the configuration of the BGE transmission network was such that a vast majority of the power generated within the BGE load pocket was generated by Constellation, thus enjoying the higher locational marginal price within that load pocket.

The BGE business remained active in Baltimore under the jurisdiction of the MD Commission, while all non-regulated activities were gathered under the Constellation umbrella. The generation-asset-stripped-actions of BGE were arranged in a fashion quite similar to the one proceeding market opening. As Constellation was active in the non-regulated markets and businesses, most of the actions were company-initiated. However, Constellation had to react to actions taken by the FERC and SEC.

This pattern applied to all the US utilities, because the restrictions regarding communication between the regulated and non-regulated arms of the corporate were quite strict. Operationally there cannot be much communication, but naturally finance, risk management systems and IT-related benefits could be achieved. However, operationally firms needed to act separately.

The United States is the largest national economy in the world with over 300 million inhabitants and a high GDP. The mere size of the home market clearly opened substantial opportunities for the company to grow, and the company was not bound by nation state boundaries. Expanding into a neighboring state was not as substantial a barrier as expanding into a neighboring nation state where perhaps culture, business traditions, habits, language, and operative customs are different.

Constellation started by a wave of nominations, complemented initially by investments and later replaced by acquisitions. This clearly reflected the policies of the new CEO and his ideas of managing the business. The focal point of regulatory interaction was shifted from being between the regulator/legislator and the firm to being between the firm and the customer. The interaction between the regulator and the legislator and between the customer / voters and the legislators remained relatively constant.

7 TOWARDS A THEORY OF CO-EVOLUTIONARY INTERACTION AT MARKET OPENING

This chapter develops a theory based on the data collected and processed during this research. The chapter is organized so that the presentation of results of the research is carried out by key research question. At the start of the chapter the results regarding the key question related to the changes in the competitive dynamics at the time of market opening are discussed. Similarly, the findings and research practicalities based on the research material are discussed which is then followed by the Propositions. Presenting the results related to key research question regarding the co-evolution between the firm and its environment and the interaction between the firm and the environment at market opening follow a similar format. A discussion regarding the justification of the selected methods and the findings based on the research can be found in the Discussion, Chapter 8.

7.1 PROPOSITIONS REGARDING CHANGES IN COMPETITIVE AND MARKET DYNAMICS

For the purposes of this research I defined the firm in sub-chapter 2.2 as a goal-oriented (Aldrich, 1979) boundary maintaining (Aldrich, 1979; Williamson, 1996) governance structure (Williamson, 1996) that makes use of the productive resources for the purpose of supplying products and services (Penrose, 1959). The ability of a firm to conduct business successfully after the market opening process depends on an array of different factors: First, the accumulated history of the firm itself, (Chandler, 1962; Quinn, 1985; Aldrich, 1979), second, the market and the regulatory environment prior to the market opening together form the general scene on which the process may take place (Schumpeter, 1964; Williamson, 1975; Aldrich, 1979; Coase, 1988; Kahn, 1988; Kirzner, 1992; Foss and Christensen, 2001), and finally the ability of the firm to take action and implement the plans (Chandler, 1962; Aldrich, 1979; Andrews, 1980; Quinn, 1985; Mintzberg and Waters, 1985).

I first focus on the process of market opening itself, the motivation and characteristics of the process and its fundamental impact on the way it changes the environment in which the firm can take action (Murman, 2003; Lewin, A. Y. and C. P. Long, 1999). In the opening of the market for competition the publicly pronounced and silent political intentions and aspirations related to market opening combined with the characteristics of the pre-market-opening state of the firm. The market and regulatory framework, combined with the process of market opening fundamentally form a cluster that impact the ability of firms to take actions in pursuit of success after the market opening, and can push the firm into a certain direction. The political aspirations, characteristics of the market, the firm and the regulatory environment all interact with each other as described in the initial interaction cycle illustrated in detail in chapter 2.

The state of the markets, the firm, and regulatory framework prior to opening the markets for competition have often evolved over a long period of time. This result of historical developments, including its functional characteristics, is known to the industry, to all participants and to the regulator. When the market opening takes place, the characteristics of the process itself are added to the cluster of factors shaping the optional outcome matrix available to the firms (Murman, 2003; Lewin, A. Y. and C. P. Long, 1999). The emerging process does not necessarily follow the intended development paths, but any events occurring during the implementation can and will impact the process and its optional outcome matrix.

In a regulated market the key activities take place between the firm, the regulator and the legislator. The firm maintains its profitability by initiating rate cases, or submits applications to the regulator regarding adjustment of the rates. In the case of major a natural catastrophes the firm will initiate a process to cover the costs from its customer base. After opening the market for competition the firms active in the market will need to react to signals from the market. If the regulatory framework remains relatively stable firms can devote their energy to addressing the competitiveness of their offering in the market place. The customer has no opportunity to impact the firm directly, but has to act through the legislative and regulatory interaction channels. The customer is obligated to purchase energy from the monopoly supplier, while as long as the monopoly supplier acts according to the framework set by the legislator and the regulatory authority that supplier cannot lose market share.

In the regulated environment the level of operational risk for the firm is very low, because rate payers will eventually carry all risk and the retail pricing covers all the costs of procurement. In the regulated environment the firms typically covered all the expenses through the regulated rates and changes in the expense base were handled through rate cases**.** In conjunction with the

introduction of competition, the firm became exposed to risk, which consisted of several elements such as the product price, factor cost, market volume, plant operability, interest, and regulatory risk. It became essential for the firm to understand the emergence of these risks and how the firm could manage these risks. Additionally, these risks change over time and thus the firms need to constantly modify their view of the environment. In a deregulated environment, provided the deregulation is carried out in such a way that the retail and distribution functions are unbundled, the regulator regulates the distribution function, but retail is competitive. The margins in the retail business were often low, in the distribution business the risk level was low and the risks associated with the generation business could often be covered through the financial markets.

Prior to market opening, there could be artificial constructs the incumbents wish to sustain in the time following market opening that do not acknowledge the possible distortions in the market place. These artificial constructs could be rigid supply contract structures or contractual terms, high pricing or an otherwise distorted pricing model, harsh termination clauses, or take-or-pay commitments. These could reflect a) the high cost of production fleet or contractual sourcing pattern optimized for the situation prevailing prior to the deregulation (stranded cost), b) overall inefficiencies in the system, c) any other possibly long forgotten construct derived from how business has been conducted up to the market opening. If extended from the time preceding the market opening, these artificial constructs could distort the overall competitiveness of the business and open up new opportunities for newcomers to exploit the situation. The incumbents are often the conservators that have shareholders interest to safeguard in the new business environment. The new entrants' role in this play would be to act like predators, aiming to attack the incumbents and at dismantling such artificial constructs.

In the UK electricity market, the pricing structure and level represented an opportunity for somebody to break the rules of the game and shake the market. This happened as Centrica started selling power to customers with a substantial discount compared to the prevailing retail price level of incumbents. If the prevailing price level would have been justifiable, this move could not have been possible. However, as Centrica had such a strong belief in the price reducing, and it could source power from the market to support its sales contracts, it aggressively used this position. In the UK it had already been possible for some years to purchase gas from an electricity company, so buying electricity from a gas company did not represent an obstacle. In addition Centrica was a nationwide brand, which was not the case with the regional electricity firms.

After the opening of market for competition firms could no longer directly cover all the changes in expenses through rate cases. They needed to be able to assess the risks associated with the commodity procurement, and ways to protect themselves against exposure. Symmetrical risk management on the factor and product market became the key to covering the costs. This could be especially difficult for the incumbents that had a long established way of operating. These firms could find it hard to realize that the electricity business after competition is different from the old model.

Before opening the markets for competition the key action took place between the firm and its regulatory environment. Whether this was the regulator or the legislator, the customer had a minor role in the picture. The customer's only channel to influence the firm was through the legislator and this channel was a long one and the outcome through the democratic process for the customer was highly uncertain. The action options available to the customer were contacting legislators or regulators either directly or as a pressure group. Forming a pressure group, however, would require that there are sufficient customers that share the same discontent regarding a company's actions and that they are prepared to start action on the issue vis-à-vis the legislators.

The firm concentrated key activities towards the regulator because this was the way to impact profitability and gain success. However, opening the markets for competition opens opportunities to customers to impact directly the firm by utilizing their new opportunity to switch supplier. Subsequently the firm needs to become concerned about their reputation among customers or face a decline in market share and profitability as was seen especially by Fortum and Vattenfall.

Referring to the Assumptions 1a, 1b and 4, Research Question 1 and the discussion above, the following Propositions and their relation to the key empiria are presented in Figure 7-1.

Proposition 1a

During the process of opening the retail electricity market for competition, the focal interaction point of the process shifts from between the legislator / regulator and the firm to between the firm and the customers / markets

Proposition 1b

Subsequent to opening the retail electricity market for competition and the shift in the focal interaction point of the process to between the firm and the customers / markets, the degree of detail in regulation will increase

Proposition 1c

In the mutual cyclical complex evolutionary interaction process that ties energy firms, customers, legislators and regulators to each other, each participant has a dual role both as a subject and as an object (i.e. an individual as consumer and voter) acting in interaction with each other. Influencing voters through supporting candidates with firm friendly agenda before elections counts as an example of such impact across the cycle.

Figure 7-1 The relationship between the Assumptions 1a and 1b, the empiria and the Propositions 1a, 1b, and 1c.

Following the pattern identified by Stiroh and Strahan (2003) and Smith and Grimm (1987), both in the US market and in the Nordic market, large firms have been actively strengthening their position by acquiring generation assets, customer bases and distribution networks in order to solidify their position and presence in more than one component market. Thus, they intended to be able to benefit from the economies of scale in operative, administrative, and marketing activities, and enhance their more-than-local character. These firms were very concerned about the competitiveness of their product offering and wanted to be able to attract big and small customers over the entire functional area with their product package. In the US the major firms actively strengthened their generation base in order to gain competitiveness in this way.

In all of the analyzed markets the likelihood that the customers would change supplier was directly correlated with the level of usage. Obviously, for the large consumers of electricity, the relative importance of search and switching cost (Damsgaard 2003) would be lower and subsequently the absolute cost cutting potential higher. The reverse was that in most markets residential customers were least tempted to use the opportunities offered by the competitive markets. Even when customers had the opportunity to switch supplier, many of them seem to be lazy, uninterested or unaware of the opportunities the open market would provide. The larger customers with subsequently larger savings potential were more tempted to switch suppliers.

In general the market opening introduced dynamism into the characteristics of the competence matrix of the firm required to sustain in the new market. In the cases analyzed the firms needed to install a risk management function and as well otherwise modify the company internally to cope with the changed environmental challenges.

There are a large number of small firms both in the US and Nordic market that have a very local character. In the US there are the co-operatives, a group of distribution enterprises established in the 1930s and still occupying the same geographical distribution area. In the Nordic market there are a large number of small distribution and retail firms with a distinctly local character that supply electricity to the local community. These firms represent the small end of the spectrum; firms relying primarily on the local distribution business as a cash flow contributor and procuring electricity only to a local clientele. If it is the case that the regulator does not set demands for continuous efficiency improvements that these small firms could probably not meet, and as long the local community remains faithful to the local retailer, there are no obvious threats

to the existence of such firms. In the distribution part of the business it will be possible to run the operation of the network with minimum personnel and thus there will not be strong pressure towards consolidation.

Although the largest energy consumers are likely to use the opportunity to switch supplier, in some cases purchasing the electricity from the local supplier seems to defy the logic of economic man. Although low voltage customers have to buy the distribution service from the local regulated monopoly service provider, the customer would not always be obligated to purchase the energy commodity from the same supplier. However, some customers, rather than setting the price as their first priority, seem to appreciate the locality of the supplier and they buy the product from a local supplier, even at a higher price. The process leading to purchase decision could thus be complemented by a new variable reflecting the perceived added value through the locality of the supplier.

Between the large power firms active in many component markets and the small local distributors there seems to be a gap. Medium size firms tend to be taking over targets for the largest firms, while the smallest firms only have a limited customer base and thus may appear uninteresting to the largest firms. The medium sized firms would typically have a limited customer base outside the primary distribution area that they supply with exchange procured electricity and risk management. Such customer bases could become interesting as an acquisition target by a major, or they could simply take the customers by means of price and supply terms.

7.2 INTERACTION BETWEEN THE FIRM AND THE ENVIRONMENT

7.2.1 Market opening for competition as a contributor to co-evolution

In chapter 2, Figure 2-2 introduced a cyclical model of regulatory impact. In this cyclical form, four distinctive component interactions markets were identified that, in concert, constitute this model. These interactions were discussed in detail in chapter 2 and this discussion included the following elements and mechanisms:

1) Interaction between the Legislator and the Regulator,
2) Interaction between the Regulator and the Firm,
3) Interaction between the Firm and the Customer, and

4) Interaction between the Customer and the Legislator.

However, the findings of this study show that this model is not capable of fully capturing the elements of the rich interaction between the firm and its immediate environment at the time of opening the retail market for competition. Nor is it capable of fully explaining the various characteristics of the mutual interaction taking place in the four elements of interaction as discussed above. Thus it is necessary to complement the model by increasing its complexity by adding secondary, and tertiary impacts and the external initiated interaction to the model.

7.2.2 Complementing the Cyclical model with a secondary interaction

The findings of this study suggest that the model presented in chapter 2 needs to be complemented by the feedback interaction cycle, spinning counterclockwise. This level of interaction is called the secondary impact interaction and it complements the model by addressing the feedback mechanisms in the model.

The concept of co-evolution (Murmann, 2003) between the firm and the environment, especially under a changing regulatory environment, could be used to explain the interaction – as defined in chapter 2 – between the utility industry and its immediate environment. In the co-evolutionary model Murman (2003) proposes that firms and institutions (North, 1999), government included, influence each other in interaction between the two so that both influence each other and form a relationship of cross-fertilization between the two. The interaction cycle, presented in chapter 2, does not have a clear beginning or end, but the process is in a continuous development or flux. The initiator that sets the cycle in motion could be anyone, and the process consists of a complex combination of parallel mutual interactions. Adding the feedback loop provides clarity to understanding the interaction mechanisms by complementing the model by one additional dimension. In reality, the influence is not unilateral, but the action by a subject causes a reaction to the object, which often subsequently is felt by the initiator. In the following discuss the characteristics of the feed back loop at a component level.

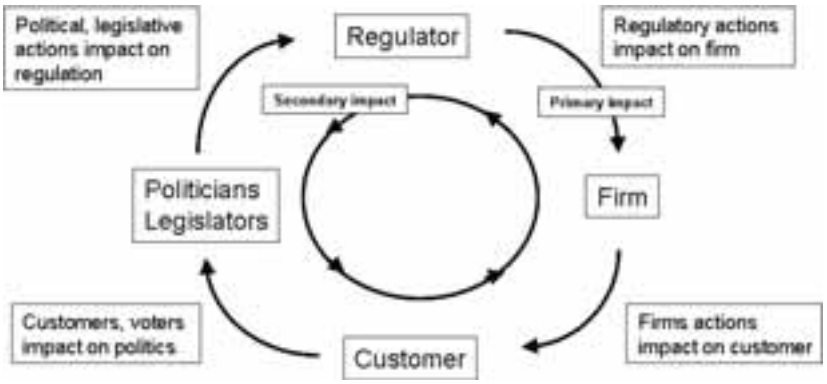

Figure 7-2 Cyclical model of regulatory impact complemented by a secondary impact mechanism.

Feedback interaction between the Legislator and the Regulator

The regulator, in the role of the administrator of the regulatory framework as defined by the legislator, provides reviews of the overall functioning of the regulatory framework to the legislator. Depending on the legislative framework, this could take place continuously, upon request, or during the special legislative sessions.[57] As an example of this is the consultative role the Maryland PSC has vis-à-vis the state legislator. The PSC provides assistance for the legislator during the legislative sessions and consults the governor throughout the year.

The legislator obtains feedback information from the energy markets through the monitoring function and the executive role of the regulator. Thus the regulator is the body that is used as the instrument to ensure that the objectives of the competitive energy markets are met. However, the legislator can obtain complementary information through other sources, such as through special independent surveys or from the various pressure groups discussed more below. The 3rd package of development of European energy regulation[58] is expected to declare the status of regulator as being independent from the legislator/government, i.e. promoting "legal and functional separation". In order to be able to produce rulings that are truly independent the regulator has to

[57] In the United States the States customarily have a legislative session that lasts only part of the year. As an example the Maryland legislative session begins in early January and lasts for 90 days. In Virginia the General Assembly meets annually, beginning on the second Wednesday in January, lasting for 60 days in even-numbered years and for 30 days in odd-numbered years, with an option to extend annual sessions for a maximum of 30 days. In nation states the legislator is in session throughout the year, with the exception of holidays and recesses.

[58] The 3rd package was given in September 2009.

be independent from the legislator / government. This should include complete budgetary authority; the regulator should have no budgetary restrictions set by the legislator/government. However, when there are disputes any involved party should always have the right to appeal to a body independent from the parties involved. In Finland this would mean appealing the rulings of the Energy Market Authority to the Market Court.

Both in Europe and in the US there is an organization whose role is to provide organized feedback from the regulator to the legislator / government. In Europe the organization in question is the ERGEG (Energy Regulators Group for Electricity and Gas) complemented by CEER (Council of European Energy Regulators). The ERGEG is a body established by the European Commission to assist with various regulatory matters. The CEER is a voluntary membership organization of the European energy regulators with the aim of promoting regulatory action in general, and to advance best practices in energy regulation. In the US the organization is called the NARUC (National Association of Regulatory Utility Commissioners).

Feedback interaction between the Regulator and the Firm

Besides functioning as the means to ensure good performance (Kahn, 1988), regulations could be intended to eliminate certain types of behavior and to promote certain other types of behavior that are preferred by the legislator in the pursuit of the "public good". Thus, the most elementary form of signaling feedback by the firm to the regulator can take place simply by following the regulations; i.e. not to rebel against the establishment, but to act in an expected and desired fashion. This can take place by the firm adapting changes to the immediate regulatory environment by altering its strategy, structure and resource base.

The second form of feedback would emerge through the firm meeting with the regulator and discussing the state of regulations, and their impact on the firms' activities. The firms could also inform regulators by giving speeches in conferences. Another aspect of this feedback is the behavior of the firm during rate case proceedings. The objectives of the firm will become evident to the regulator during the process. This is characterized by the firm interacting with the regulator in various regular processes. Failing to accept the regulator's rulings, but applying to an administrative court, thereby seeking a second opinion from courts, is a way to signal dissatisfaction with the regulator's policies.

The third form of feedback would be using political strategies in order to influence the forthcoming regulations or rulings. This is characterized by the firm giving unilaterally signals to politicians and the regulator to change the set rules. As an example of this can be highlighted the interaction process of Constellation with the Maryland PSC and the FERC during the period form 1992 to 2000. Likewise the introduction of the international strategy of Vattenfall in 1995 and the complaint to the MMC of 1993 by Centrica.

Feedback interaction between the Firm and the Customer

Any changes in the way the firm makes the products and services available to customers will ultimately impact the customer and the set of behavioral options available to that customer. According to classical economic theory the supply and demand curves intersect at an equilibrium price where the quantity supplied equals the quantity demanded. Subsequently, if the price supplied differs from this equilibrium price the quantity demanded will be impacted. Classical economic theory assumes perfect competition of a symmetrical commodity product with no brand value. Following the classical model, deviating upwards from the price dictated by market transactions would eliminate the demand for the product of the firm. Deviating downwards would, increase the demand but yield unsatisfactory return for the firm. However, in real energy markets there is substantial inertia in the market. Changing price often only causes symbolic complaints but no substantial wave of switching. For many customers the cost of electricity is still affordable and increases regarded as marginal do not change this picture. However, the firms can never be sure how high an increase will cause a massive wave of fleeing customers. Depending on the competitive situation (Rao, 2002), customers can react in different ways to the actions of the firm.

After opening the market for competition the smallest customers seem to be the least tempted to switch supplier. In the absence of the potential for tangible savings to the customer, the costs of letting competition work can be regarded as too high. Similarly, customers with the highest energy costs are most likely to switch supplier whenever this is made possible. Industrial and commercial customers with significant electricity costs in each of the surveyed markets have already used the opportunity to change power supplier. The decline in customer numbers and the subsequent reduction in power throughput should signal to the supplier its competitive position in the market. Many suppliers are thus most interested in serving the largest customers with the largest absolute earnings potential in relation to customer number, while the smallest residential

customers yield a small absolute margin per customer, but cause high cost. As examples of this dimension of interaction is customers using the opportunity opened for them, i.e. the power to switch supplier. Likewise the Swedish nuclear referendum in 1980 can be seen as a signal from the customers to the firm.

Feedback interaction between the Customer and the Legislator

According to Downs (1957), government listens to various pressure groups and lobbyists when considering which decision would yield most votes for the governing party or coalition in the next elections, and makes decisions accordingly. The government can perform opinion surveys and try to obtain information about what voters want, but as Downs pointed out, there is no consistent information channel from the voters to the political parties that constitute the government and the opposition. However, if members of the public are irritated enough they will submit articles in the local media and thus make their voices heard at the legislative level. Similarly, legislators are able to convey their message to the public by appearing in the media.

Silence from the voters' side regarding a certain issue can be an indication of voters' satisfaction with the prevailing situation. However, it could also indicate that political parties are asking the wrong questions. Constant signaling of the opinions of the voters by pressure groups can be interpreted as a certain signal regarding voter satisfaction with the agenda of the government.

Political parties obviously try to keep the public informed of their actions, as this should make them electable in the next elections. Politicians appear before the public on various occasions, give interviews to the media, write books, appear in the newspapers and yellow media, and try otherwise to be on the top of minds of the people. However, if the politicians' primary objective is to be electable in the following elections, they primarily want to show to voters how well they promote the perceived interests of the public. As an example, a component of this could be how much and from whom the politicians receive funds needed for their election campaigns. Sometimes politicians wish to avoid publishing this information as it could impair their public image as impartial. This form of feedback interaction can be seen in all cases in the form of media appearances. The legislators give interviews and intentionally present their view on the policy issues in media. Sometimes the counterproductive feedback is obtained through unintentional appearances.

7.2.3 Adding the tertiary impact to the model

The next phase in the development of the model is to add the third dimension of influence; i.e. the tertiary impact. This influence takes place across the cycle. The primary, secondary and tertiary levels of influence are illustrated in Figure 7-3.

Interaction between the Firm and the legislator

By tertiary impact I refer to the firms' contacts directly with the legislature, bypassing the routes described above. These could include firms' intentions to pursue political strategies in order to obtain legislative benefits, or simply to increase politicians' understanding of the firms' position. By inviting politicians or other influential individuals to become members of the board, advisory board or any other key forum associated with the firm could be a means to create a direct communication link between the firm and the legislature, and possibly to emphasize the link to one of the parties in the legislature thus creating a channel bypassing the influence of the regulator.

The interaction between the firm and legislator is naturally a two way street. Besides the firm trying to influence the legislature, the legislature could try to influence the firms directly. The primary objective of a political party in government is to remain in government (Downs, 1957). Although officially there is very little discussion about parties being active in purchasing votes to help them stay in power, this is a possible scenario. Politicians could, in theory, trade with the firms, provide benefits and obtain votes from the influence sphere of the firm in return.

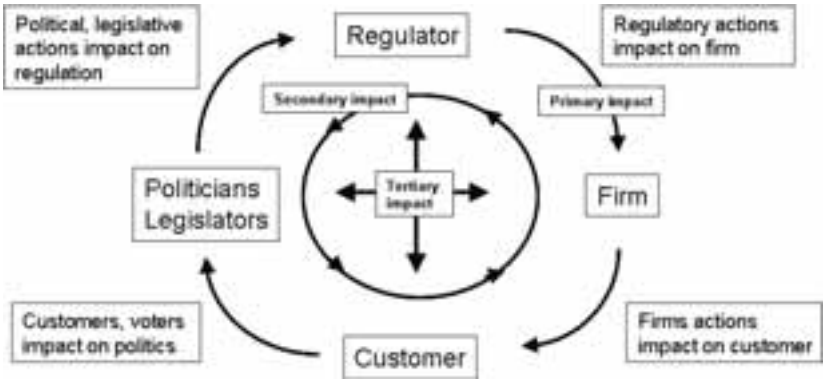

Figure 7-3 Complementing the cyclical model of co-evolutionary interaction under regulatory environmental variation by tertiary impact.

Firms with a long monopoly history and mindset, often with structure and operational patterns that are a result of that history, are easily tempted to pursue political strategies (Bonardi, 2004; Lamberg et al., 2004) in order to impact the legislature, and subsequently the forthcoming actions of the regulator, and thereby trying to shape the future in their favor. Under a monopoly firms can have developed business activities that under competition would not have been considered as economically feasible. However, firms easily resist any change and regard the present state and structure of the company as justified and worth defending. Holburn and Vanden Bergh (2008) have shown the way in which the regulator has been nominated is reflected in firms' political strategies. They found that regulated firms are more likely to try to influence the political sphere when the head of the regulator is appointed, and firms are more likely to approach political institutions when the environment is politically volatile.

The former static monopoly environment would have been an easier platform for the firms to implement changes, but in the absence of incentives to do so, they preferred to maintain the prevailing structure. It could be deemed understandable that firms with a long monopolistic history are tempted to defend their positions even under changed business environment, and thus implement political strategies to this end.

Bonardi (2004) proposes that former monopolies would be perfect examples of firms using defensive political strategies to their advantage. When the environment changes some firms could be tempted to try to alter their destiny by implementing political strategies. This is well in line with Stigler's (1988) idea that regulation is acquired by the industry in order to benefit the industry. Bonardi (2004) names, as an example, EdF (Electricité de France) that has, due to years of daily contact with government officials, lobbied its home government to prevent the market opening of its domestic market to foreign entrants, while going on an acquisition "spree" around Europe. His main argument is that those former monopoly firms, which after deregulation want to implement an aggressive global strategy, have to maintain defensive aspects on the political "home front".

Bonardi et al. (2007) analyzed the non-market strategies of US utilities over a 13 year period, and state that performance is influenced by the characteristics of the firm's regulatory and political environment; especially rivalry among the interest groups or politicians and by internal capabilities. A fruitful interaction between firm and government is presented by Sol (2002), who studied a Chilean utility. The findings suggest that the success of this utility was the result of government's early mover policy vis-à-vis neighboring governments. This would imply that if a

utility would be given an early mover opportunity and the neighboring countries would follow the same path, the early mover would enjoy a beneficial position vis-à-vis the competition. This aspect would indicate that there would be a "deregulation market" where the governments are active, and by timing their actions they could provide perceived benefits for the firms. In cases where deregulation is carried out with a mutual understanding between the company and the legislator / regulator the result could be smooth and more easily digestible. This is, however, not often the case.

Implementing changes in firms can be carried out deliberately, proactively or as a reaction to make the company survive. Besides using its jurisdictional power to force the company to modify itself, a legislator / regulator could ease the transition by providing incentives to the company to change. Crafts (2006) believes that the most important impacts of regulation on productivity occur through changes in incentives to invest and innovate. Kamershcen and Reynolds (2000) believe that economic, political and social factors affect state regulation. The incentives to innovate and invest under regulation often follow the surcharge path. This could likewise apply to a regulated distribution function under competitive markets. Evidence of this can be found in Fortums and Vattenfall's discussions with the politicians and any other attempt to exercise political strategies.

Interaction between the customers and regulator

The regulator is the agency for the promotion of competition in the energy markets. In those markets where this is the case, the regulator could find ways to promote competition by informing the public about the opportunities that competition could open. The regulator could arrange newspaper or TV ad-campaigns, arrange public meetings to advise about the opportunities that competition could provide the public. Regulators could campaign for an increase in switching by preparing and updating an interactive list of service providers and their respective tariff structures vis-à-vis the industry, and through the customers contacting the regulator directly.

Examples of the regulator providing information directly to customers could be found from Finland, Sweden and Maryland in the US. In all these markets the regulator, (Energiamarkkinavirasto in Finland, Energimarknadsinspektionen in Sweden and the Office of People's Counsel's in Maryland) maintains a web site[59] based service where individual

[59] www.sahkonhinta.fi.

customers can find price information and make comparisons between various electricity suppliers and various electricity products.

Here again, the influence is not unilateral. Customers do contact the regulators and file complaints about the firms' behavior. This will subsequently initiate a process, of inspection of the activities of the firm, and whether such activities follow the set laws and regulations.

7.2.4 Adding the external influence to the cyclical model

The model discussed is not isolated from the rest of the world. So far only the interaction internal to the cycle has been discussed. To emphasize the external influences it is necessary to add elements describing how the external markets and industries ultimately influence the behavior of the actors in the model.

All the interaction cycles keep spinning and they receive momentum from outside influence. This influence is included in the regulatory interaction model and is presented in Figure 7-4 below, which concludes a picture of the interaction cycle.

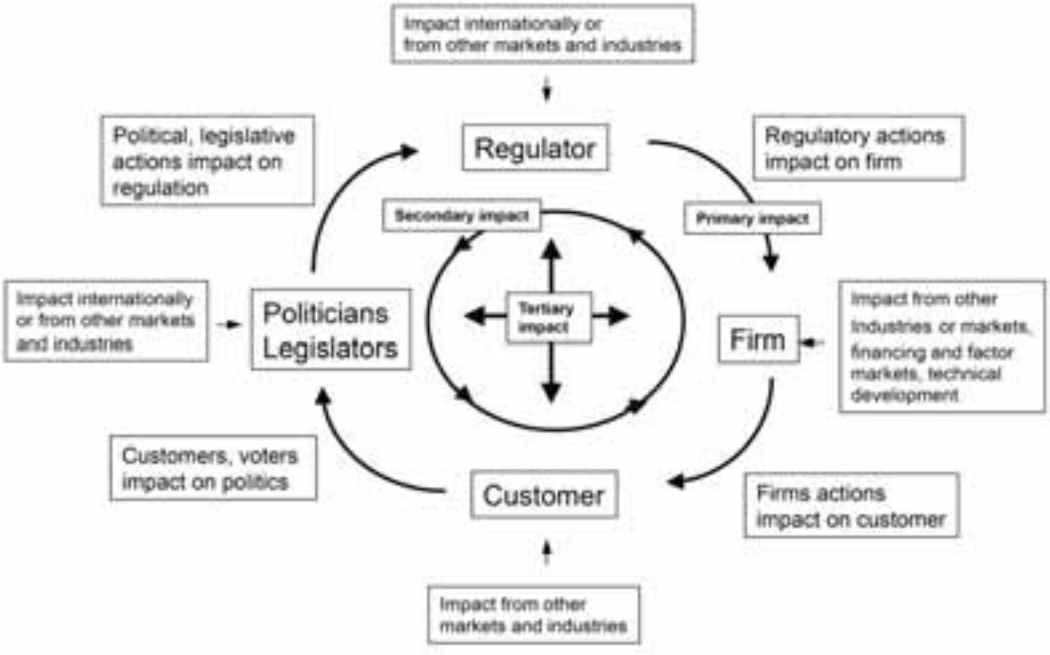

Figure 7-4 The cyclical model of co-evolutionary interaction under regulatory environmental variation.

In this model, the fuel that keeps the cycle spinning is not only derived from inside the cycle, the actors in the cycle, but also from outside. Firms carefully follow the development in the industry and market and other industries and markets. Likewise the factor markets impact firms' decisions, because they need to satisfy the needs of the financial and other factor markets, and the developments in the minds of customers, of the basis for making purchasing decisions. Technical development in the industry and other relevant industries is reflected in the firms' decision regarding the way to serve the customer base, and what customer base to serve.

Customers are influenced by the behavioral models common to other industries. External influences, i.e. attempts to change the beliefs and preferences of others through persuasion or strategic communication, have been discussed by Druckman and Lupia (2000). If customers are used to changing service provider in mobile communication, cable television, long distance telephoning, banking, and insurance or any other commodities' market, they can easily also adopt this "shopping" pattern to an energy commodity. Any product markets where the customer is used to making a choice between service providers will contribute to the learning experience of customers adapting to the idea of being able to switch the supplier of the service.

Often incumbents want to emphasize the difficulty of switching supplier, but sometimes even the direct actions of a regulator and legislator impair customers' ability to benefit from the competitive markets. Most often price is the key factor that steers customers' behavior, but even other issues such as convenience or reliability could be important. In electricity retail price is the most important, reliability is second, and "everything else is twenty-fifth".

The ability of electricity suppliers' to introduce new products for customers could contribute to the awakening of customer interest. Such new products that could invoke such interest in switching supplier could include environmentally designed products with a high share of renewables in the generation base. Such products could become interesting to consumers with a higher level of environmental consciousness. Other new options could be products where the price of the commodity could be complemented by price hedging, thus resulting in fixed price for month, quarter, year or other period. A model for such products could be derived from other industries where service providers have designed products to suit better customers' needs. Hourly pricing, where the price changes on an hourly basis would need to be complemented by hourly metering to yield all its benefits.

Both legislators and regulators obtain influence from other industries and from the international arena. International arena in the case of the United States refers both to discussion with the

regulators of other states and with the Federal Regulator and the international arena, because it falls under the states' jurisdiction to decide upon the regulatory model in each individual state. Likewise, legislators and regulators discuss with their colleagues from different industries and can thus adapt regulatory patterns, models and means from other industries. In this way legislators could use these international contacts as a learning experience, adopt new concepts and begin promoting this internationally sourced concept.

The impact from other industries should not be overlooked, either. Some lessons could be learned from processes from other industries although the structural and technical differences in how the business is organized between different industries have to be taken into consideration.

The firms active in an industry interact with firms from other industries; for example firms from the financing industry and suppliers and subcontractors. Technical development can open up new opportunities for managing the interface between customer and supplier. Such opportunities could emerge through the introduction of an automated meter-reading infrastructure, and demand response based on a price-derived load control.

7.2.5 Propositions on firm - environment interaction

At market opening part of the regulatory barriers were lifted, thus changing the internal logic of the business and opening new opportunities to firms. Customers no longer were obligated to purchase their energy from an incumbent supplier. Attracting new customers from old and new markets became an opportunity to grow, while retaining the old customers became a priority because regulatory restrictions no longer hindered competition from capturing market share. Stiroh and Strahan (2003) argue that in a deregulated banking environment, the better banks grow and the poorly performing banks shrink. The poorly performing banks will come under increased pressure, while well-run banks enter their previously shielded markets. They identified a merger wave appearing after deregulation, taking place within a decade of deregulation. Take-over opportunities emerged, because previously such transactions would have been impossible or the regulator would have eliminated the benefits.

After deregulation efficiency of operations became an issue because in a competitive situation the way a company is run, among others, impacts directly the value it can provide to customers, shareholders, employees and society as a whole. Smith and Grimm (1987), in their study on the

impact of deregulation into firm performance in the US railroad industry, state that strategy will likely be an important determinant of firm profitability in recently deregulated industries.

In the cyclical interaction model between the firm its customers, legislators and regulators presented in previous chapter, the introduction of competition primarily changes the interaction environment so that customers are provided with an opportunity to signal to the incumbent supplier his/her dissatisfaction by leaving the supplier or renegotiating the supply contract. The emergence of competitors attracting customers further forces a former incumbent to change market behavior, or stated simply, to start listening to the customers. A firm needs to consider carefully the needs and wishes of customers or to face losing market share. This subsequently could encourage the firm to change the behavior vis-à-vis regulators and legislators and encourage that firm to implement political strategies to shape the regulatory environment in its favor.

Individual customers can adopt new behavioral patterns from other fields of industry, such as telecommunication, banking, the insurance industry or any industry in which the customer is not tied to one monopoly supplier. Supplier switching becomes more commonplace as customers become aware of the opportunities that a competitive energy market opens.

Opening markets for competition increases energy firms' likelihood to consider behavioral patterns found outside the energy industry. Energy firms can adopt new behavioral patterns from other industries, such as financing. This is especially important in applying risk management practices because firms face the risks of the product market and of losing customers in quite different way.

Legislators and the regulators likewise change their behavior, because, besides the internal logic of the energy industry, new models can be adopted from other industries and other markets. This is especially the case in Europe where the creation of the common European energy market with 27 individual national markets and characteristics requires substantial co-ordination between the markets and the Commission.

By reference to Assumptions 1 and 1b, Research Question 2, the assumptions and the discussion above, the following Propositions are developed:

Proposition 2a

Any government setting the regulatory framework for firms or individuals can be positioned along a regulatory continuum, whereby the degree of detail in the regulatory framework

increases while moving along the continuum. With an increase in the degree of detail in the regulatory framework, the freedom of movement for a firm decrease and visa versa.

Proposition 2b

In the evolutionary interaction process each participant impacts the choice of action available to others and causes them to react elevating the level of interaction to a new level. This interaction shapes each participant's role and restricts each participant's future portfolio of available action options.

Proposition 2c

The stronger the market position of the firm prior to deregulation, the more tempted it is to try to impact through the use of political strategies and searching, new ways to influence the creation of a favorable environment for the firm after deregulation.

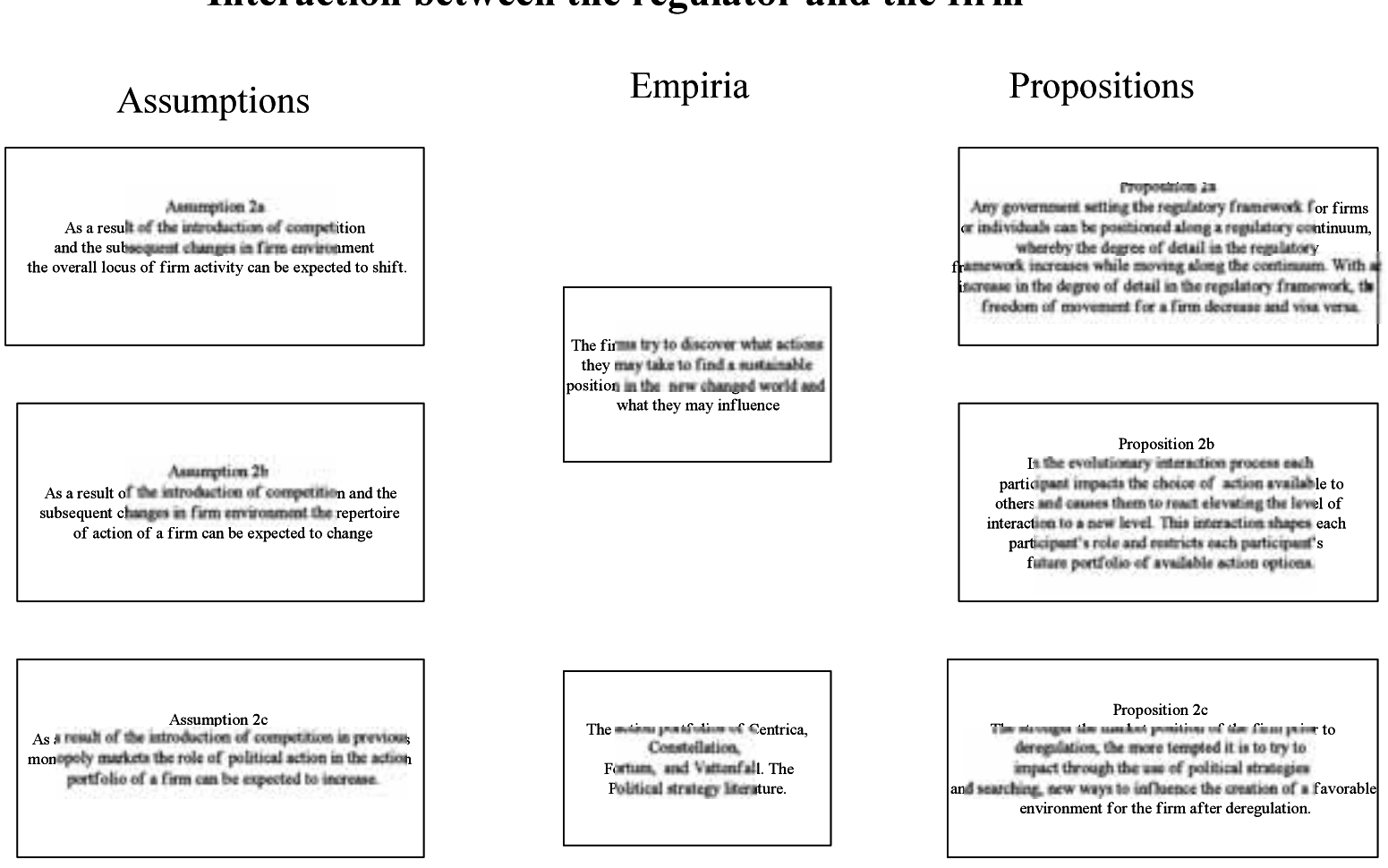

Figure 7-5 Interaction between the regulator and the firm.

7.3 HOW ENERGY FIRMS' ACTION PORTFOLIOS HAVE CHANGED AT MARKET OPENING

The third research question is discussed using several conceptualizations of success in order to demonstrate the concepts in a wider perspective. To illustrate success I have used a composite index, CTI (see Appendix B) consisting of multiple financial and operational factors (Venkatraman and Ramanujam, 1985, 1986). The Corporate Turnaround Index, CTI is a comprehensive metric showing how the firms analyzed have managed to change the company. The objective of CTI is to incorporate financial performance with tangible actions that are intended to modify the company.

The CTI for the firms analyzed is presented in Table 7-1. This represents the year of retail market opening for competition and two years after that date. In the changed environment the requirements to do business also changed, so firms that do change themselves comprehensively enable a continuous changing process of the firm and thus make it easier for the company to face continuous change.

All the firms analyzed herein reacted to the environmental changes and modified their strategies substantially in order to accommodate the changed environment. Reflecting the changes in strategy (Quinn, 1995) and using the measurable impact of strategy changes (CTI) as a proxy for strategy changes, it is easy to note that it is common in all the firms studied that they took steps to benefit from the opportunities that market opening yielded. The changes in strategy, as illustrated in Table 7.7 could be regarded as substantial. All the firms analyzed show a substantially increased CTI two years from the beginning of the analysis period, i.e. at market opening.

Constellation grew through mergers and developing their generation business in the wholesale market. In the Nordic market Vattenfall and Fortum expanded into each other's former home markets through a wave of acquisitions. In the UK Centrica grew in the electricity retail market and by acquisitions in foreign markets. This is compared to the prevailing situation prior to the market opening, when all the firms were static utility firms with low growth and strategy that was adjusted to the static environment demands.

If the CTI is measured for a two-year period, immediately following the opening of the market for competition, the period 2000-2002, the firms experienced substantial changes. For Vattenfall and Fortum the market opening was concluded in 1997, but due to the availability of data the period 2000-2002 has been used as a proxy for the correct period. Here we can discuss whether the relatively slow changes in the Nordic power market are reflected in the firms' slower reactions to market changes, and the reactions to the opening of the market for competition took place only with a delay. This two-year period is partially a matter of practicality and partially dictated by the data. To put the CTI changes into perspective and to illustrate the change in CTI as a function of a change in company, if we assume that a hypothetical company has grown revenues at the pace of inflation, i.e. 2 per cent pa, the change in CTI over a two year period would be negligible, Here the CTI change exceeds the rate of doubling in two years period, which means over 40 per cent growth pa ($\sqrt{2}$). Thus it is obvious that all the analyzed firms have seen substantial change.

Mill's method. Temporal bracketing. Table 7-1 reveals that acquisitions were a common way to change the firm for all the firms analyzed. The second common feature is the fact that almost all made substantial changes in the management of the company. As most of the firms changed management, the obvious conclusion is that the new changed company needed a new management. This immediately leads to a discussion; was it the management that caused the change to happen or was it the change that caused the changes in management.

Company	Year of market opening and CTI	CTI two years after market opening	Three primary contributors to CTI increase
Centrica	1998 1	2000 2,2	Profitability, Acquisitions, Strategy/Growth
Constellation	2000 0.5	2002 3,6	Investment, Changes in Management, Acquisitions
Fortum[60]	2000 0.5	2002 3,7	Acquisitions, Investment, Changes in management
Vattenfall[61]	2000 0.5	2002 3,7	Acquisitions, Growth/Strategy, Changes in management

Table 7-1 CTI on analyzed firms on market opening and two years after with main contributors to growth in CTI.

All firms managed to survive after the opening of their respective home markets for competition; they have grown and delivered profit to the shareholders in the form of a dividend. If we define success by any accounting-based measures, return on capital employed, return on assets or return on equity, the image begins to blur, because this is influenced by the capital structure of the company and it is very difficult to compare the firms on an equal basis. A return on capital employed can sometimes be a function of the chosen strategy, characteristics of the business environment, or a function of the past of the company. Thus it does not give justice to firms to compare their ROCE figures without taking these differences into consideration. One potential fair way to compare the success of the firms would be to compare the stock price development. This analysis, however, has not been included in this research but could provide an initiative for further study.

A reasonable measure of success at an operational level would be to compare the various operational metrics between the firms. Such metrics would be, average cost to serve a customer, average sourcing cost of electricity, reduction in average sourcing cost, or any other yardstick.

[60] Market opening completed in mid 1990s, year 2000 / 2002 used as proxy due to non-availability of data.
[61] Market opening in mid 1990s year 2000 / 2002 used as proxy due to non-availability of data.

However, due to the non-availability of operational data, any comparison of success at the operative level is not possible within this research scope. This would, however, be an interesting subject for further research, and similar to using other measures of success, would probably reveal other contributors to success. These could also be a theme for further research.

By measuring the growth in sales against additions in capital employed in the business during the two first years after market opening for competition, we can produce another view of the firms' success. We can easily see that the firms have grown, but by injecting new capital they have not managed to increase the revenue base proportionally. If we assume that the old businesses prior to the market opening, and the new businesses had an equal profitability and risk level, the injection of capital into the business should result in a corresponding increase in business volume and profit level. Thus, 30 per cent injection in the employed capital in the business could be expected to yield a 30 per cent increase in revenues.

Vattenfall, however has managed to squeeze 80 per cent growth in revenues by increasing 30 per cent in the capital employed. However, the structure of Vattenfall at the time of completing the analyses was a result of major acquisitions that to some extent reflected the readiness of the company management to take risk positions. This in turn could reflect the shareholding of the company; i.e. the Swedish government holding the entire equity of the company. However Vattenfall had acquired major firms in Germany and had grown substantially, so the revenue impact was immediately visible. Had the government not had full control on the company, the financial markets could possibly not have accepted the risks taken.

The other firms analyzed had been much more cautious in injecting capital into the business, thus resulting is slower growth in revenues. These firms can be divided into two categories; Constellation and Centrica had revenue growth above 10 per cent while Fortum had to be satisfied with much smaller figures. These firms did not invest so dramatically in acquisitions, and thus, due to the lead times of investments, the revenue impact cannot be seen immediately. During the period analyzed the asset base of Vattenfall doubled, and the increase in revenues increased even more dramatically. The correction of the impact of the different accounting practices applied in different jurisdictions could, however change this picture.

The Centrica development is easily explained by Centrica's ability to create substantial new business volume without the need to inject substantial amounts of additional capital in the business of selling electricity to the existing gas customer base. Vattenfall however has pursued growth by acquisitions. The remaining firms primarily pursued organic growth.

	Centrica	Constellation	Fortum	Vattenfall
Functioning retail market	Yes	No	Yes	Yes
Functioning wholesale market	Yes	Yes	Yes	Yes
Capital employed two years after BUSD	2,87	8,77	16,93	18,57
Growth in capital employed per cent	25,4	15,1	16,8	27,7
ROCE two years after, per cent	28,6	6,0	11,1	5,4
Growth in revenues (CAGR) per cent	15,2	15,1	2,5	78,5
CTI change ratio over 3 years	2,2	7,2	7,4	7,4
BDI 2004	0,52	0,28	0,71	0,72

Table 7-2 Case comparison, causality between market opening and success.

The financial figures do not appear to provide a clear correlation between the BDI, CTI and those financial figures. Employed capital appears to be more dependent on the company's history and strategy than on the development at the time of market opening for competition. The same applies to the BDI, because it clearly results from the chosen strategy. Functioning wholesale markets are a prerequisite for functioning retail market, but not sufficient to guarantee the retail markets functioning alone.

With the exception of Vattenfall, growth in revenues appears to be related to the growth in capital employed. Another vague link could be identified as an inverted correlation between capital employed and ROCE.

Observing the case firms CTI from the time prior to market opening to the time subsequent to it we can clearly see that the firms modified themselves, altered their strategies and subsequently the resource configurations, in order to suit the changed operating environment. This clearly follows the pattern observed by Reger et al. (1992) and Ahmad and Chiasakul (2005). As Foss

(1999) regarded the treatment of the *dispersed knowledge* in the firm as a key element, the management (Stiroh and Strahan, 2003; Pettus, 2000) obviously has a key role in this. In an optimal case, strategy emerges (Quinn, 1985) as a function of a pattern of decisions (Andrews 1980) and structure would follow the strategy (Chandle,r 1962), while resources should then be shaped accordingly (Wernerfelt, 1984, 1995). Based on the material provided herein, the changes in management were followed by changes in strategy and subsequently changes in resource configuration. Zajac, Kraatz and Bresser (2000) have demonstrated that the timing, direction and magnitude of strategic changes can be logically predicted based on differences in specific environmental forces and organizational resources. In the case firms, these changes obviously do not occur spontaneously but as a result of decisive determination of the management, complemented by a strong determination to make the changes happen. Cummins and Rubio-Misas (2006) study found that the number of firms declined while the average size increased. In this research the firms increased in size through investments and acquisitions while the number of players clearly declined. Another result in the Cummins and Rubio-Misas (2006) study indicated that inefficient firms disappeared through insolvency or liquidation. In the energy industry there has not been many cases of insolvency or liquidation, because most of the firms operate a local monopoly distribution network that yields a constant return on the employed capital. Such firms can become take-over targets, but somebody will always need to take care of the operating the distribution network.

Of the two options that Hull (1989) has defined to be available to the firm, the replicator and interactor, the replicator would copy external patterns and apply them to the company while the interactor would adjust the model to the firm's and the environment's needs so that the end result would be different from the original. The adaptation classification of Miles and Snow (2003) follows "*a general physiology of organizational behavior*". As such, the firms, hovering on the edge between structure and surprise (Eisenhardt and Bhatia, 2002), will sometimes find it hard to adapt to changes in the environment because the competencies accumulated in the firm may not be easily transferred to serve new applications.

The first steps firms take in a new environment are not necessarily sufficient to create a continuous development towards a set goal, so continuously observing what other firms are doing would appear to be a natural behavioral pattern. This clearly happened in the case firms' environment. As the new operative mechanisms in the market were not known, firms were keen to learn these new mechanisms by observing the behavior of other firms and following the actions whenever they appeared to be successful.

As CEO Rowe of Exelon stated during interview "*This is an industry in transition and the balance of power could shift between the organized labor, customers and shareholders depending on the supply situation*", the world will not be ready after taking the first steps on the path towards competitive markets.

Both the regulator, and the firms impacted by the regulatory framework, aim in the long run, at creating an environment where product could be supplied to the final user efficiently, keeping the quality of the operations high, and maintaining a favorable environment for the future development of the industry. To reach this goal all the parties involved should realize that although the short-term objectives could appear contradictory, by co-operation and frank discussion between the regulator and the regulated firm, a mutually beneficial environment could be produced.

This Proposition was the case for firms active in the same market. Both Fortum and Vattenfall engaged in establishing excessive marketing organizations as soon as the market was made competitive. Both firms believed that a strong involvement in marketing and customer service are the key to success in the market after it has been made competitive. Whether it was the business intelligence they conducted or the fact that they could have been using the same consultants to come to the same conclusions, remains unresolved, but will provide some ideas for firms facing market opening and thus the similar situation in the future.

Both firms dismantled these excessive marketing organizations and concentrated on lowering the production cost of the services for customers.

In the US, as the retail markets have not yet really been made competitive, this pattern cannot be verified. However, in most cities, the dominant utility company has pursued political strategies vis-à-vis the regulator in order to obtain lengthy transitional periods for the stranded cost recovery, which supports the Proposition.

In the UK, the incumbent utility firms relied on the prevailing price level in the market, and especially its sustainability, believing that nothing can change the market logic.

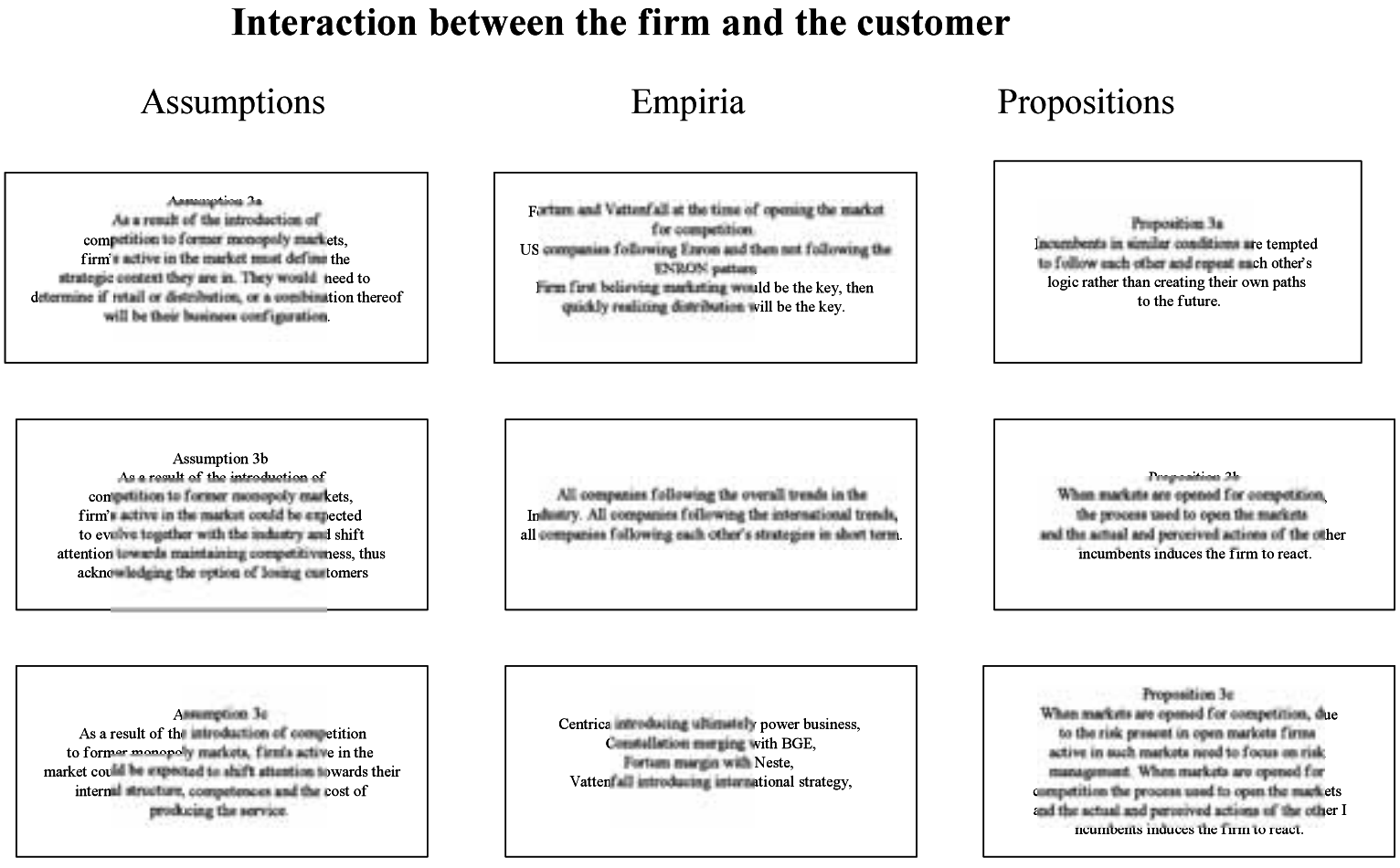

Figure 7-6 Interaction between the firm and the customer.

Referring to the Assumptions 3a, 3b, 3c and research question 3 and the discussion above, the following Propositions could thus be presented:

Proposition 3a

Incumbents in similar conditions are tempted to follow each other and repeat each other's logic rather than creating their own paths to the future.

Proposition 3b

When markets are opened for competition, the process used to open the markets and the actual and perceived actions of the other incumbents induces the firm to react.

Proposition 3c

When markets are opened for competition, due to the risk present in open markets firms active in such markets need to focus on risk management. When markets are opened for competition the process used to open the markets and the actual and perceived actions of the other incumbents induces the firm to react.

Figure 6-1 above illustrates the perceived attitude of the regulator towards the firm and the attitude of the firm towards the regulator. The attitude of the regulator towards the firm at the outset is naturally neutral, but the picture illustrates the perceived attitude, which in fact partially reflects the attitude of the firm towards the regulator and not the other way around.

Political strategies (Bonardi, 2004; Lamberg et al., 2004) are common among firms that have a substantial position to guard. Under some jurisdictions the interaction between firms and government can be very friendly (Sol, 2002), while other governments could have a very stringent attitude towards the firm (Centrica).

At the time immediately proceeding and following market opening for competition, the regulator often has a strong relationship with the former incumbent, because that regulator primarily focuses the new regulations towards the incumbent. As in the UK, Swedish and Finnish market, the incumbent dominated the market prior to the market opening, so opening the market for competition was primarily focused vis-à-vis that former incumbent. Depending on how the incumbent managed the business prior to market opening, primarily the extent it utilized the opportunities the closed market could provide, had an impact on how harsh the actions the

regulator would take against the incumbent at the market opening. The attitude of the incumbent towards the regulator impacted likewise the attitude of the regulator towards the incumbent, and the expected position of the incumbent after the market opening.

Former monopoly firms must swallow their pride and begin to listen to the regulator, and the newly established regulator should listen to the industry to achieve common good for society as a whole. Should the incumbent pretend that the regulator does not have a role, and thus the regulations do not need to be followed, could dramatically impair that incumbents' ability to perform business transactions after market opening. The sooner the incumbent takes a more pragmatic attitude towards the regulator, the sooner it will be able to do "business as usual".

Should the incumbent wish to impact the forthcoming new regulatory environment, the regulator could be prepared to listen to the wishes of the incumbent in case that incumbent wishes to have his voice heard. In cases in which the incumbent is not liked in the industry and among customers, the regulator could be tempted to prepare more harsh regulatory environment than otherwise would be necessary.

In the staged regulatory system, in use primarily in the US, where retail regulation is primarily under the jurisdiction of the states, the local regulator has been more tempted to listen to the wishes of the local champion. The local company, in many cases, has wished to obtain lengthy transitional periods to postpone the abolition of the monopoly for as long as possible into the future.

As a general conclusion of the discussion above, we could state that predictability in the functional environment makes planning the future easier. Working in a predictable environment makes resource configuration easier, while the risks are reduced. However, it is very seldom possible to predict with accuracy the future development of the competition, although a predictable regulatory environment would be a benefit to the firm. Obviously, making decisions in a predictable environment is less risky that in a less predictable environment. In general, increased predictability and stability of the regulatory environment could encourage a firm to follow a longer-term policy.

8 CONCLUSIONS

In this chapter I assess the contributions of this research in the light of the previous research and the literature addressing research in political economy and strategy, while evaluating the weaknesses of this study. I develop practical managerial implications both for the industry and the regulatory environment. Theoretical contributions are addressed in sub-chapter 8.2, the managerial contribution in sub-chapter 8.4 while sub-chapter 8.4 discusses the limitations and suggests ideas for future research.

8.1 DISCUSSION AND CONTRIBUTION

Throughout this research work my intention has been to elevate the understanding of the interaction between the energy firms and their regulatory environment. Besides presenting theoretical contributions in this research, I intend to provide support for the strategic daily management of energy firms that are working under a perennial gale of competition and regulatory changes. Likewise wish to provide support to the legislators and regulators who, by shaping the overall regulatory framework for the firms', impact the available alternative courses of action the firms can take.

To these ends I used the research setting reflecting the changes in the business environment of electricity retail firms at and after the time of opening of the retail market for competition both in the US and in Europe. My research sample is chosen to cover a sufficient number of market - regulatory environment - firm performance permutations to enable me to travel the whole way from research initiative to theory generation. My focal point has been to study the companies at the time of opening the markets for competition and thus try to capture the changes in competitive dynamics and the co-evolutionary paths the firms and their respective business environment have taken when the markets were opened for competition.

All the firms studied in this research have seen competition in some form beginning from the 1990s, although each case is really individual regarding the characteristics of the processes of how competition was introduced. In the UK, Centrica had experienced gas competition prior to electric retail competition and could thus benefit from the accumulated experience. In the Nordic area, the paths the case companies traveled had similarities as competition was introduced first in wholesale markets by forming a common Nordic wholesale market. Subsequently the market opening was introduced in retail. In most of the US, the retail competition only works on paper. Although there are no case companies in this research representing the notorious California experiment of market opening, California firms could be an interesting case to analyze using the context described in this dissertation. In California the introduction of competition followed its own path and logic as the competition was first introduced and then later the process was reversed and competition in retail suspended.

The electricity markets prior to opening for competition were either vertically integrated geographically monopoly markets, or monopoly markets where the entry was constrained by other means. The value chain from generation to retail sales was rigid. There was either a position I which one company was in charge of the entire value chain, or the wholesale oligopolies had exclusivity on the sales to local monopoly distribution / retail firms. The transactions were monopolistic between buyer and the seller. In the US the state regulatory commissions regulated the rates and the rate of return for the utilities, while interstate transmission was regulated by the FERC. In Europe there was not a clear national regulator, but changes in the monopoly power prices often had to be approved *ex ante* through other governmental bodies.

In the US the early beginning of electricity industry was characterized by retail competition and in some cases even included competition in distribution. To restrict the influence of the firms, regulation was introduced in the US in the early 1900s. In Europe the first steps towards the retail competition were taken in the UK as a result of Prime Minister Thatcher's policies, which subsequently spread to other jurisdictions in Europe and to the US. In this context the activities of the company Enron, as a promoter of competitive markets should be mentioned. Enron initiated a campaign to promote retail competition in Europe and multiple states in the US, which subsequently decided to open the regional markets for competition. However, due to transitional arrangements and other restrictions only a limited degree of competition was achieved.

In most researched jurisdictions an oversupply of power prevailed at the time of the introduction of competition, which subsequently led to price cuts for some customers. This was, however,

only temporary, and when the supply situation became more stringent the prices obviously reacted to supply shortages. In all jurisdictions the distribution rates were regulated, but in the US the regulatory commissions had wishes to also control the retail prices.

The strategies the case firms selected were quite different though the strategic options the firms took can be seen to follow clear main paths. In all the analyzed cases the management succeeded in changing the company (illustrated as changes in the CTI) to be able to react better to the changed demands of the new business environment. The primary contributors to increase in the CTI for all companies were the active wave of acquisitions. Besides acquiring multiple target companies all of the firms analyzed changed parts of their executive management. For some firms the regulatory environment was stable and predictable but this was not the case for all. However, all firms at the time of commencing the study were very different from the firms they had been 20 years previously. The CTI analysis reveals the configurations of actions the firms had followed and that the paths the different firms had chosen had been company identical. However, when the actions initiated by the company were plotted on a time scale against the time of market opening for competition, the company identical patterns became more noticeable. For some firms the internally and externally initiated actions proceeded parallel, and for some firms they followed in waves.

The event structure analysis revealed a different view of the process. The focal point of activities shifted from being between the firm and the regulator / legislator to being between the firm and the customer. There was difference between the cases, but the fundamental shift seemed to follow the same basic pattern. For Constellation, the starting point was a long established two-tier regulatory structure with the state and Federal Regulators both having a say on company actions. The legislator, likewise, introduced legislation on dual levels, which restricted the company's freedom of movement. The external driving force was the influence of Enron both at a state and Federal level. The process ended, at least temporarily, in the key interaction taking place between the firm and the customer, with the regulator and legislator influence still being active. The regulative framework was not really designed for competitive markets but the existing structure had to be used to support another modification of the system.

For the European cases the energy regulator did not exist at the beginning, but was established during the market opening process as a part of that process. However, the regulatory task for the European firms could have been achieved through government ownership in the firms and the consequent control from within the firm. Thus the initial phases of the process took place

between the firm and the legislator and gradually shifted towards being between the firm and the customers. For Centrica and Fortum these initial phases included changes in the ownership structure. The regulator's role increased during the process and obviously the introduction of EU-level regulations further shaped the regulatory environment. As the regulator was not present in the early phases of the process, clearly the regulator could not have had a substantial role during the initial phases. However, the legislator assumed this role by passing legislation and thus forming the regulator. After the implementation of the third package in 2011 the role of regulators can be expected to increase further.

8.2 THEORETICAL CONTRIBUTION

The development of the research approach used in this research was encouraged by multiple scholars. Firstly, Winter (2005) emphasized the industry as a population of heterogeneous firms differing in their ways of doing things, and also differing in size as a consequence of indigenously produced idiosyncrasies. Secondly, Teece, Pisano and Shuen (1997) proposed preparing theoretical and empirical work to provide understanding on why firms get to be good, why they stay that way, why they improve, and why they sometimes decline, pointed the way towards the approach used in this research. Furthermore Zajac, Kraatz and Bresser (2000) suggested that the timing, direction and magnitude of strategic changes could be logically predicted, based on differences in specific environmental forces and organizational resources. The role of regulatory changes was emphasized by Rhonda, Douhaime and Stimpert (1992) who regarded the relationship between regulation / deregulation, strategic choice, and firm performance, as pressing issues and suggested that the long-term effects of deregulation on strategic response and firm performance should be studied. Furthermore Reger et al. (1992) emphasized deregulation's direct effects on firms' strategic choices and both direct and indirect effects on risk and return. Further, Aldrich (1979) saw environmental variation, such as deregulation, as having a substantial external impact on the goal-setting of the organization, and as a good setting for research.

As the past is more than a prologue (Daughety and Forsythe, 1987), firms may need a lengthy time to adapt into the new prevailing market situation after years of regulation, but the accumulated learning is, and remains, within the firm. When substantial regulatory changes are implemented there are no historical evolutionary models to follow and even the regulatory institutions have little understanding of how deregulation will operate in the short run and evolve

in the future (Larsen and Bunn (1999). Similarly, Dyner and Larsen (2001) suggested that the planning systems the electric utilities used under monopoly times become less useful after deregulation and need to be replaced. This is well understandable as if the planning systems reflect the concepts of a simplex / static environment that has subsequently been replaced by a dynamic / complex environment (Duncan, 1972).

The view of classical economics in describing demand and supply and the balance function between these is static by nature and has subsequently been complemented by the dynamic market process view of the Austrian economists (von Mises, 1928, 1979; Hayek, 1973; Kirzner, 1992; Foss and Christensen, 2001); thereby explaining how the actions of various actors' cause an effect on the market balance function. The interaction between the firm and the customer (von Mises, 1928, 1979; Coase, 1988; Kirzner, 1992; Hayek, 1973; Foss and Christensen, 2001; Mitzruchi and Yoo, 2002; Rao 2002; Bailey and William, 1988; Greene and Smiley, 1984; Joskow, 2006; Cho and Kim, 2007) has been widely researched and documented among all the component interactions researched herein. Regulatory theory has complemented the characteristics of classical economic theory and provided clarification on the laws of interaction between the regulator and the firm (Smith, 1776; Chydenius, 1765; Kahn, 1988; Aldrich, 1979; Schumpeter, 1964; Williamson, 1975; Coase, 1988; Kirzner, 1992; Hayek, 1979; Stigler, 1988; North, 1990, 1992; Sappington and Stiglitz, 1987; Kahn, 1988; North, 1990 and 1992, Viscusi et al., 2000; Lindblom, 1977).

Under regulatory change the political dimension obviously plays a key role. Thus the economic theory of interaction presented herein builds on and incorporates, besides theories discussed above, the interaction theories of political economy and influence between the voters and the legislature / government (Buchanan and Tullock, 1965; Downs, 1957; Olson, 1965; North, 1990 Kessler, 2003; Downing, 2005; Degan, 2006). In the approach used herein, I complement the economics under regulatory change with aspects of political economy and the theory of democracy and individual action; i.e. I develop theory that unifies politics with economics as encouraged by Downs (1957). The key element that combines the various research streams is the fact that under regulation the customers of the utility firms', are at the same time, voters in elections and thus capable of casting their ballots in elections thereby impacting the forthcoming governmental policies regarding utility regulation. In an ideal world, once an organized society exists, the individual members of the state are integral parts of a larger more meaningful

organism (Buchanan and Tullock 1965). Whether the decisions the government take favor any individual or a group is up to the individual or group to decide, and signal in the voting booth.

The government, acting in a Russeauian fashion as a device of carrying out the will of the people (Downs, 1957), that is the state acting on behalf of the markets or replacing the markets (Lindblom, 1977), can be seen as an instrument to produce "public good" in the form of correcting a market failure (Buchanan, 1968), by using interventionist policies of the state correcting that failure (Keynes, 1936). Von Mises (1928, 1979) spoke strongly against interventionism, while promoting the idea of markets fixing themselves. Buchanan and Tullock (1965) acknowledged the supply and demand for public goods. Krugman (2009) discussed widely the parallel between the great depression of the 1930s and the crisis of 2008 and the absence of the role of government in both crises.

Obviously, using this complex and profound research framework capturing the elements of democracy, market economy and concerted action of the members of the society in pursuit of the perceived common good and complemented by the interaction between the parties active in it, would yield a theory that could explain some fundamental characteristics of the functioning of society. Energy, being one of the inescapable items of everyday life seen in a context of an economic – democratic evolutionary framework, and specifically at the time of making the long-closed markets competitive, could reveal some fundamentals of how the society in which we all are members, works.

The Key contribution of the research comes from combining the co-evolution theory into a regulatory change in the electricity retail industry. The concept proposed by Murman (2003) and Lewin, A. Y. and C. P. Long (1999) have been used as a basis for preparing the theory.

The key theoretical contribution of this research is in the combination of multiple research streams that are merged into a cohesive whole. The presented theory builds on combining the interaction mechanisms presented by the referred scholars, but expands the approach by the inclusion of the mutuality of the interaction, the temporal element, and the external influence. The theory also introduces the co-evolutionary approach emphasizing the interaction between the firms, customers and the regulatory/legal framework. The presented theory is a simple and comprehensible model combining various levels of influence.

This model, presented in Figure 7-4, illustrates the cyclical model of regulatory interaction between the firms and their respective environments. The opening of energy markets for

competition has often been seen as a one directional process that the legislator initiates while the ultimate beneficiary is the customer, and where the temporal dimension has not been present.

Another theoretical contribution produced during this research is the presentation of the degree of regulation of different governments on one regulatory continuum. The novelty of this approach is presenting the no-regulation and the "zero kelvin temperature of society" as the two extreme ends of this continuum, while all the real governments' approaches fall in place on a point between these two extremes.

8.3 LIMITATIONS AND FUTURE RESEARCH

In this research the multiple choices I have made are justifiable in the context of the research. Many of the choices could have been made otherwise, and this could possibly have led to marginally differing interpretations. However, I have tried to justify all the choices thoroughly, although choosing other available options would sometimes have led to an easier and more manageable research process. I made the choices with the objective of ensuring the best possible quality in the outcome.

The selection of cases used herein could be open to criticism. Collier and Mahoney (2004) were concerned that possible bias is caused by the selection of cases for research. Obviously the case selection could cause bias in the results and interpretations; for example, if the cases represent an extreme case and the researcher does not recognize the potential for bias that such case selection could cause. A way to control against this bias would be to inspect the full variance of the dependent variable.

The motivation for the selection of this particular sample has been thoroughly discussed above. However, whether the choice of cases could impact the conclusions has not been discussed so far. My interpretation is that selecting other case firms for this research could possibly have provided a slightly different tone to the conclusions, but presumably not substantially different results. Besides, finding other case firms could have proven to be challenging as the number of markets opened for competition has been limited and thus selecting case firms representing functioning competitive retail markets would be very difficult. However, selecting different cases representing other industries as the basis for further research could prove to be interesting.

The research setting chosen for this research could be criticized for being narrow and too rigid in that it focuses only on the US and Europe, and only on the electric utility industry. The environmental variation used in this research is limited to opening of the electricity retail markets for competition. Environmental variation as a concept stretches far beyond the selected geographical areas and industries, and could thus be understood much more widely than has been in this research. However, in a utility industry for a company that has been in full control of the business prior to changes, opening the market for competition brings such dramatic challenges that within the utility industry it is hard to find more substantial changes as a research setting. As such, by selecting other research settings could possibly reveal new features of the co-evolutionary process, and would thus function as an initiative for the research setting in further research.

The cyclical model of regulatory interaction between the firms and their respective environments presented herein can be regarded to be relatively general, and could be applied in businesses outside the electricity industry. Many of the conclusions presented herein are based on a pattern that could possibly be identifiable in other cases in other comparable industries. If this was the case it suggests that there are factors in the environment that could explain this feature. The key in the presented model is the fact that the customers of utility firms are, at the same time, voters who together have the capacity to elect politicians who in turn prepare the legislation impacting the regulatory environment. In other industries the interaction cycle will probably have other elements included, but a similar type of cyclical interaction could probably be identified in those regulated industries with such an important position in society. A subject for further research would be to rank the relative importance of the different components of the interaction cycles. Likewise, this analysis could be expanded to other industries.

The use of company issued press releases as a source of company event data could possibly bias the results due to the choices the firms have made regarding the issues that are included in a press release. It is in the nature of press releases that firms very seldom publish non-favorable material, except in the unavoidable case of publicizing annual financial results. Including information on all such non-favorable events the firms have selected not to publicize and have thus not been included, would have required access to the internal company files that are not generally open to the public, at least any time close to the events in question. For Constellation, in order to be able to identify all the relevant events, and complement the press releases the filings in SEC and FERC were used, and complemented by using regulatory filing data. However, without the knowledge of what really has happened in the firm, it is only possible to

use the data that was accessible. It is not possible to ask for data the existence of which one is not aware. For European cases, the firms' annual reports and press releases provided sufficient information to enable the capture of the sequence of events. This was, however, complemented by the confirmatory interviews.

Another source of bias is that resulting from the fact that different component markets use dissimilar methods and modes of opening markets for competition. The prevailing legislation, in conjunction with law enforcement and administrative traditions within and between markets, results in different ways and levels of permitting the conduct of communication between the firms and the regulators, and could thus contribute to distortions in the results. The features of the market opening process could be taken as a variable in the process, and used as a means to explain better the evolutionary process.

The methodology has been presented in this thesis. It is recognized that there are possible sources of inaccuracies that originate from the choices relating to methods of analysis. When calculating the CTI, a special weighing system was considered in order to enhance the role of some of the components. The use of logarithmic scale when calculating the CTI, however, is intended to do the same. By using a logarithmic scale the significance of first actions will be emphasized as compared to the following actions.

The dissimilarities in accounting practices and legislation between the markets and jurisdictions create a sea of problems. Here I have tried to overcome these obstacles by either defining the calculated ratios specifically for the purposes of this research, or by using very simple characteristic ratios instead of sophisticated accounting analysis tools. Increasing the level of sophistication would, however, require much more in-depth analysis of the accounting principles and would presumably have a secondary impact on the accuracy of the results, but simultaneously substantially increase the complexity of the model.

The results regarding dynamics of market opening for competition can only be regarded to reflect the chosen cases. As the market opening processes in markets not covered by this research are so substantially dissimilar to the procedures covered herein, some caution should be exercised when presenting the conclusions. This, however, is closely connected with the political strategies some firms exercise vis-à-vis the different market authorities, thus aiming at having impact on the opening procedures, pace and timing. This is especially an area where there is much more to research.

This research is limited by the geographical scope and by the low number of case firms. However, the results, with certain reservations, could be applicable to energy firms' regulatory interactions in other geographical markets. Ideas for future research would be to test the concepts in different environments. These different environments could be new geographical environments or new business environments facing competition. Another idea would be to analyze whether similarities could be identified between the behavior of firms being forced to face competition, and firms that were born under competition. An interesting concept would be to see if similar behavioral patterns could be identified in different industries between firms that face a competitive environment.

Additional research would be required to analyze the other forms of market distortions and their possible impact on the new entrants' chances to successfully enter the market and prosper: i.e. to repeat what Centrica have done.

When trying to apply the results in other industries there is a cause for concern. The characteristics of the industry in question have to be taken into consideration; such as, the competitiveness of the market and the characteristics of the competition. However, the general observations regarding the mutual interaction cycle are probably applicable for other industries, provided that the special characteristics of the industry in question are considered. In this research I have not considered the applicability of the model outside of the energy industry, and thus the opportunities to apply the results in other industries are uncharted.

In order to be able to test how well a regression hyperbola combines the points in the diagram illustrating the dependence of ROCE on capital employed would require substantial statistical analysis. However, the higher capital employed seems to result in lower ROCE. Proving this kind of relationship would require additional research and thus I am unable to draw this kind of conclusion, because the amount of data used in this research does not justify such conclusions. However, the data could suggest that there was a negative relationship between capitalization and ROCE.

The ideas for further research could thus be listed as follows:

1) Analyzing whether there is a link between the development of dynamic capabilities and success in firms facing substantial changes in their respective market environment.

2) Performing statistical analysis of the strategic choices the small utility firms have made, whether they intend to stay in retail business or to concentrate only on the wires business.

3) Selecting other research settings; such as comparing cases from other industries, other geographical environments, and different regulatory frameworks as the basis for research.

4) An analysis of whether further symmetrical behavioral patterns could be identified between industries in firms that are made to face competitive environment.

5) Analyze the relative importance of the different components in the interaction cycles with each other, and with the success of the firms.

6) Analyze whether similarities could be identified between the behavioral patterns of firms in an industry being forced to face competition and firms that were born under competition at a given time. The analysis could be indexed to a major change in the competitiveness framework, such as the introduction of new technology.

7) Examine whether similar behavioral patterns could be identified in other industries between firms that were made to face competitive environment. This would test the model presented in this research in other industries.

8) Analyze other forms of market distortions and their possible impact on the new entrants' chances to successfully enter the market and prosper.

9) Analyze the consistency of the strategic moves between different firms at the time of market opening. This could be an especially interesting topic in the multi-product and multi-SBU environment.

10) Analyze the impacts of political strategies of firms at the time of opening the markets for competition.

11) Test whether the regression hyperbola combines the points in the diagram illustrating the dependence of ROCE on capital employed. This would require substantial statistical analysis.

8.4 MANAGERIAL IMPLICATIONS

The results provided herein open up interesting perspectives for the management of energy firm, the regulatory authorities and the political actors preparing or initiating changes in the prevailing regulatory framework. All these actors should study carefully the results of this research, analyze the consequences that the cyclical model of regulatory interaction between the firms and their respective environments could have for them, and implement the concepts provided herein in their respective strategic thinking. No subject in the cyclical model of regulatory interaction can act independently without having to consider the consequences of his or her action. Neither can anybody regard himself or herself as only an object without any role in taking the initiative in the spinning of the interaction cycle.

The energy firms, with regard to how good and how efficient they are and how good they are in shaping the environment to their benefit, must base planning of their future course of action on the real processes taking place in their respective environments, and the interaction with their environment. They need to observe carefully the events taking place in the immediate functional environment of the firm, analyze those events, and determine the consequences that the events could have for the firm. They need to plan actions so that they are able to influence the events they are able to influence, and adapt and adjust according to the events they are unable to influence. The energy product they wish to sell to the customers always comes with a public service dimension, and with an intensive political dimension associated with it.

Regulatory change is one of the key processes the firms have to take into consideration and use as a guide in shaping their strategy and their subsequent resource configuration. The firms might choose to try to impact the development of the regulatory framework by implementing political strategies. However, the outcome of attempts at political influence is always highly uncertain and despite the hard work this might turn unfavorable for the firm. Centrica's development during the early phases of the competitive environment could function as an example of how things might not develop favorably when the firm overlooks the regulatory framework.

The politicians designing any changes in the regulatory environment under which the firms are active should remember that that the business base is ultimately competitive, and thus making arbitrary changes to the business framework of the firms would change the competitive nature of the business. These changes could lead into undesired consequences.

The characteristics of the prevailing political and administrative traditions in the jurisdictional framework in which the firm is active can naturally set limits to what is acceptable and what is expected. It is important for firms to comprehend the position of the respective business environment along the regulatory continuum, and thus how much freedom of movement can be expected. Firms only can act within the framework that is determined by the legislative and regulatory framework. The degree of political influence that is accepted in various political regulatory frameworks varies between jurisdictions. To observe this becomes especially important if a firm intends to expand into new market areas, where the positioning along the regulatory continuum is different from that which the firm is used to. The firm must carefully investigate the characteristics of the new environment in order to be able to determine how it has to alter its behavior pattern and what is deemed as acceptable in the new environment. Naturally, this assessment has to be carried out before an expansion to new market areas is considered.

The cyclical interaction model provides a clear framework for the firm to navigate under regulatory changes. Sometimes the internal logic of the political action portfolio that impacts on the regulatory framework, and subsequently the firms, may appear vague. However, understanding that the basic logic caused by the legislature is primarily concerned with re-election in forthcoming elections (Downs, 1957), can provide firms with an understanding of a sometimes short-sighted approach taken by politicians. By this I am not suggesting that the firms should have a strong role in financing the re-election of the incumbent, but that firms should merely understand the inherent logic in why politicians act the way they do.

The firms active in political strategies should likewise acknowledge the logic and mechanisms of political action. Understanding the fundamental cause-effect interaction in the presented mutual interaction cycle can provide firms with insights about how and why the political level acts as it does.

Similarly, understanding customers' behavioral logic should be included when planning a product offering. Obviously, the firms active in modern business life have to stay alert of the changes in the preferences of the clientele, and the technical evolution in their respective business environment. Understanding the logic of why and how customers change supplier, and especially how the evolution in this logic is impacted by external influence will provide the firms active in energy business with significant insights.

For the politicians it is important to understand the role of the firms in trying to provide reliable supply of electricity to customers, while satisfying the needs of those that have invested their capital in the firm. The political regulatory framework should be such that it provides a planning framework for the firms' activities on a medium-long run that the firms can rely upon – a framework that although evolves continuously, does not change constantly and unexpectedly. Politicians should likewise understand the logic of firm political action. They should understand that the primary mover for a firm in pursuing political strategies is to shape the business environment more favorably for the firm. Thus, firms could donate monies to the political actors and hope this method shapes the business environment to their favor. This could potentially include erecting entry barriers for potential new entrants, having more favorable treatment for the firms' products or providing exemptions for the firm from the regulatory or legislative framework or postponing the implementation requirement. Successfully combining the firms' political action agenda to the politicians' pursuit of re-electability could provide a successful combination when applied skillfully. Listening only to the loudest voice will probably not yield the best results for the entire society – however this is defined.

The firms and the regulators should both appreciate that everybody involved with the development of the regulated energy business is trying to make the best out of the situation. Both parties should understand that the other party is honestly trying to improve the situation but could see the means and the priority order differently.

Customers should observe the opportunities opening at the market place and react to the apparent price signals. This provides momentum for the markets that forces the firms to improve their service quality and product offering and ultimately keeps the cycle in motion.

Regulators should keep investing time and effort in finding ways to improve the competitiveness of the markets, improve the market awareness of the customers, and remove market entry barriers. Despite all this, regulators should not remove all regulatory oversights. Without any oversight the firms in a natural monopoly market would have the temptation to become predators. This could be damaging for the industry as a whole.

A procedural cause for concern emerges from the California competitiveness experiment. Even if a firm observes all the details of the regulatory framework, it is not always possible to foresee what will happen with 100 per cent certainty. The regulatory risk, defined as the option of the regulators to make any unforeseen decisions that impact on the firm, will always be present and will have to be taken into consideration by the firm. In this sense the historical evolution of the

regulatory framework in Europe has been somewhat more predictable, consistent and coherent when compared to their US counterpart. The changes in who is in the position of power in the political sphere in Europe does not have such a substantial impact on the freedom of the firms to take action as it does in the US.

Finally the impact of influence from outside the industry cannot, and should not be overlooked. Evolutionary processes in other industries will subsequently be reflected in the energy industry, and the behavioral patterns observed in telecommunications, banking, or cable television, could be adopted by actors in the energy industry.

There will always be national characteristics relating to how the industry is perceived, how strong an attitude the regulator has of the firm, and how the firm sees the role of the regulator. Through technological development the characteristics of the business change, the products and offerings are modified over time to match better the changed tastes of the customers, the structure of the regulatory framework changes, politics changes, and subsequently the firms have to change. The politicians who, through their position in the government are able to design a regulatory framework for the energy industry that leads into a well functioning competitive environment, in which economy flourishes through efficiencies and justifiable allocation of resources, will have a small advantage in the elections over the opposition.

There will always need to be someone to consume the product. Someone will have to make purchase decisions based on the perceived value of the product the firm tries to promote in the market. In a competitive market the firm that is best positioned to benefit from small changes in the regulatory environment, will have a marginal advantage over competitors.

In this concluding chapter I have assessed the overall contributions of this work, both on theoretical and managerial level. The theoretical contribution emerges primarily by combining the previous work of multiple scholars in multiple research streams into a new combined research stream. Based on the data obtained during this research process I have developed a model illustrating the cyclical interaction between the utility firms, their customers and the legislative regulatory environment, and included aspects of external influence. This model could help both firms and governments to understand the behavioral logic of the other party and thus, to help both parties to contribute to a stable, predictable development of a mutual regulatory and competitive framework. This in turn could contribute to creating an environment whereby

the industry could develop so that the resources of society are deployed in an efficient fashion, and the prices of products and services would reflect the ability of the actors to sustainably develop the industry.

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APPENDIX A
REVIEW OF CASE STUDY LITERATURE

	Bensabat et. al.	**Eisenhardt**	**Glaser & Strauss**	**Ragin & Becker**	**Yin**
Approaches					
Phases / components	Determining the unit of analysis, consideration whether to use single vs multiple cases, site selection and finally data collection followed by data analysis and exposition (page 374).	1. Getting started 2. Selecting cases 3. Crafting instruments and protocols 4. Entering the field 5. Analyzing within-case data 6. Searching for cross case patterns 7. Shaping hypothesis 8. Enfolding literature 9. (reaching) Closure	1. Comparing incidents applicable to each category 2. Integrating categories and their properties 3. Delimiting the theory 4. Writing the theory	Ragin and Becker concentrate on defining the case and discuss the overall process. They do not provide detailed instructions how to carry out the research	1. A study's questions, 2. Its propositions, if any, 3. Its unique unit(s) of analysis 4. The logic linking the data to the propositions, and 5. The criteria for interpreting the findings.
Definition	A case study examines a phenomenon in its natural setting, employing multiple methods or data collection to gather information from one or few entities. The boundaries of the phenomenon are not clearly evident at the outset of the research and no experimental control is used. In case study researcher may have less *a priori* knowledge of what variables of interest will	The Case study is a research strategy, which focuses on understanding the dynamics present within single settings.			1. A case study is an empirical inquiry that: * Investigates a contemporary phenomenon within its real-life context, especially when * The boundaries between phenomenon and context are not clearly evident 2. The case study

	be and how they will be measured.				inquiry * Copes with technically distinctive situation in which there will be many more variable of interest than data points, and as one result * Relies on multiple sources of evidence, with needing to converge in a triangulating fashion, and as another result * Benefits from the prior development of theoretical propositions to guide data collection and analysis
Theory generation	The analysis of case data depends heavily on the interrogative powers of the researcher. Using multiple methods of data collection offers the opportunity for triangulation and lends greater supports for researcher's conclusions. Working with a research partner could provide assistance. The research should move from objectives	Should begin as close as possible to the ideal of no theory. The resultant theory is often novel, testable and empirically valid. The process is intimately tied with empirical evidence. Contradictory information could help generating.	• Towards the end of the process, the researcher could become overly confident with the theory that emerged from the collected data • When presenting the findings, substantial description of the field studied should be included in the	The authors present the Mill's method where the two cases are divided into components consisting of the dependent variable and a group of independent variable. Comparing these to each	• Relying on theoretical propositions. By this Yin means "following your instincts", i.e. the original idea the whole research is based on. • Thinking about rival explanations. Yin means that the researcher should be functioning

	and questions to assumptions and design choices, to specific data uncovered and finally to results and conclusions. readers should be able to follow this path readily.		report so that even a layman is able to follow the presented logic • The researcher should be concerned about the credibility of the presented material, and pay enough attention on comparing the findings with reference groups • When presenting the theory, even more rigorous testing of the theory could be justifiable to satisfy even the most demanding readers' appetite.	other provides insight on how the cases differ and what could be the decisive contributor to the different outcome. This method suits the Small N case studies.	like "a devils' advocate", trying to elaborate rivalling theories. • Developing a case description. In this option Yin encourages to prepare a case description framework for organizing the case. • The case study must be significant. This primarily refers to not selecting an area of research that does not have any significance. • The case study must be complete. This means that the case being studied is one in which the boundaries of the case- that is distinction between the phenomenon being studied and its context – are given explicit attention • The case must consider alternative perspectives. • The case study must display sufficient evidence. The

					critical pieces of evidence must be contained within the case study report. • The case study must be composed in an engaging manner.
Assessing the theory		Strength is that it is likely to generate a new theory The emergent theory is likely to be testable with constructs that can be readily measured and hypothesis that can be proven false. Theory is likely to be empirically valid. A good theory should be parsimonious, testable and logically coherent. A strong theory should have a good, although not necessarily perfect fit with data.	1. Accurate Evidence: On the factual level the evidence collected must be reflected versus comparative group to verify that a fact is a fact. This means that as the theory will be based on the data obtained from the case/cases in question. 2. Empirical generalization: The generalization helps the researcher to delimit the grounded theory's limits and helps to answer the question whether a fact derived from the research generally applies. 3. Specifying a Concept: Another use of comparative data is to specify a unit of analysis for		• Construct validity, establishing correct operational measures for the concepts being studied • Internal validity (for explanatory or causal studies only, not for descriptive or exploratory studies), establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships • External validity, establishing the domain to which a study's findings can be generalized, • Reliability, demonstrating that the operations of a

			one-case-study. This is done by specifying the dimensions of the concept designating unit. 4. Verifying the Theory: Collected evidence can be used to verify the theory. The comparative data can be regarded as the best test for the applicability of the theory. 5. Generating Theory The main goal for the researcher should be to use the collected data for purposeful systematically generating of new theories from the data.		study – such as the data collection procedures – can be repeated, with the same results
Criticism	• In the published case study research--- the objective of the study was seldom clearly specified (page 378) • They regard most of the analyzed studies as explanatory in nature, where "it is difficult to determine if the researchers were at the same time attempting to generate hypotheses"(page 378). They found, that the studies surveyed "did	Intensive use of empirical evidence can yield a theory, which is overly complex. May result in narrow and idiosyncratic theory.	• Towards the end of the process, the researcher could become overly confident with the theory that emerged from the collected data • When presenting the findings, substantial description of the field studied should be included in the report so that even	This method requires very strong assumptions: a deterministic set of forces; the existence of only one cause; the absence of interaction effects; confidence that all possible causes are measured; the absence of	• Construct validity, establishing correct operational measures for the concepts being studied • Internal validity (for explanatory or causal studies only, not for descriptive or exploratory studies), establishing a

	not provide clear descriptions of where their topics fit in the knowledge building process" (page 380) • "Authors in our sample did not indicate if their case studies were part of systematic/programmatic research plans." (page 381) • "The degree of detail about data collection methods was not very revealing, a substantial problem with most of the case studies observed" (page 382)		a layman is able to follow the presented logic • The researcher should be concerned about the credibility of the presented material, and pay enough attention on comparing the findings with reference groups • When presenting the theory, even more rigorous testing of the theory could be justifiable to satisfy even the most demanding readers appetite.	measurement errors; assumption that the same pattern would occur if data were obtained fro all cases in the universe of relevant cases.	causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships • External validity, establishing the domain to which a study's findings can be generalized, • Reliability, demonstrating that the operations of a study – such as the data collection procedures – can be repeated, with the same results
Applications	1. The phenomenon of interest can be studied in its natural setting and learn about the state of the art and generate theories from practice 2. The case method allows the researcher to answer how and why questions and to understand the nature and complexity of the process. 3. A case study is an appropriate way to research an area in which few previous studies have been carried out. 1. Can the phenomenon	Situations when little is known of the phenomenon, current perspectives seem inadequate, because they have little empirical substantiation or they conflict with each other or common sense. Case research is complementary to incremental theory building from normal science research.		Small N case studies	* To explain the presumed causal links in real-life interventions that are too complex for the survey or experimental strategies * To describe an intervention and the real-life context in which it occurred * To illustrate certain topics within an evaluation in a descriptive mode * To explore those situations in

	of interest be studied outside its natural settings? 2. Must the study focus on contemporary events? 3. Is control or manipulation of subjects or events necessary? 4. Does the phenomenon of interest enjoy an established theoretical base?* Case study is appropriate for certain types of problems: those in which research and theory are at their early, formative stages and sticky practice based problems where the experiences of the actors are important and the context of action is critical.				which the intervention being evaluated has not clear, single set of outcomes * It may be a meta-evaluation, a study of an evaluation study.

APPENDIX B
FORMULA FOR BUSINESS DIVERSITY AND CORPORATE TURNAROUND INDEX

Calculating the Business Diversity Index

The intention of the company Business Diversity Index is to illustrate how balanced the business portfolio of the firm is and how much the firm is a one business firm. The higher the value of the index, the more balanced is the business portfolio of the firm and to a lesser extent it is a one business firm The contrary is also true, i.e. the lower the value of the index, the lesser is the extent that the firm is diversified and more dominated by one business area. In case the three largest business areas have the same size, the value of BDI would be 2. In case the largest business area is double the volume of the two next business areas, the resulting value of BDI would be 0,5. The BDI is calculated as follows:

BDI_n = Sum (Rev($B2_n$), Rev($B3_n$) / Rev ($B1_n$), where

BDI_n = Business diversity Index of firm n

Rev (B_n) = Revenue from Business n, where n illustrates the relative significance of a business within a firm, i.e. Rev ($B1_n$) reflects the revenue from the biggest business unit, Rev($B2_n$) and Rev($B3_n$) subsequently reflect the revenues form the second and third largest business unit.

Towards integrated measure of achievement, Corporate Turnaround index

In the literature, success is in most cases understood as financial or operational performance, and thus the operationalization of performance is based on accounting or operational performance indicators. For the purposes of this research it was deemed practical to develop a new index that would combine the accounting-based and operational measures with the actions of the firm in a form of a common index illustrating the achievement of the firm. This would serve the purposes of variance strategy in sense making (Langley 1999). The following thus incorporates the financial and operational performance indicators into indicators that illustrate the actions the firm is taking based on the selected strategic direction.

The accounting-based indicators, though the differences in accounting standards and practices makes comparison between different regimes somewhat challenging, provide a clear image of

the financial performance measure of the firm within a regime context. The operational indicators, measured as market share, operational efficiency or other measures, in turn illustrate the operational performance. For the purposes of this research, the intention was to complement the accounting and operational measures by indicators that illustrate the effect of the strategy and the actions taken by the management. The strategic action indicators illustrate actions of the firm, like acquisitions, investments, changes in top management positions, realization of IPO etc and form an index illustrating the achievements, and incorporating thus the financial success with the actions by the management. The composite index is called the Corporate Turnaround Index. The composition of the CTI is presented below.

In the CTI the actions of the management and the result of these actions are both represented, and thus one can state that this leads to double accounting of cause and effect. However, in many cases to assess the change of a corporate only by the results of the actions will take time. Before the results of the actions will become visible, several years could pass so in order to assess the actions of the management to change the firm from inside within a short time frame, a measure that eliminates or speeds up the time factor will serve the purpose. The CTI together with its component indices will clearly illustrate the actions that will cause the change to take place within the context of the firm.

The purpose of the CTI is to illustrate the pace at which company turnaround is carried out. Several aspects all contribute to the turnaround of the company, and thus the purpose of the CTI index is to include all the relevant yardsticks, each of which can be used to indicate the pace of which the company is transformed into something it has not been before. The intention is to collect all these aspect under one title and then use this yardstick to illustrate the success of corporate management efforts in altering the company to a desires direction.

The actions the firm is taking are illustrated in the CTI as an activity pattern. This pattern is then combined to the financial performance data to produce a Corporate Turnaround Index, CTI to demonstrate the dominant activity pattern of the firm. The CTI is presented in detail below.

The CTI will thus be a composite index, containing all the most significant aspect that can be used to measure the corporate turnaround. It will contain accounting-based performance measures, operational performance measures, and basic indications of action the management of the company has taken to realize the corporate strategy.

In the context of this research, the CTI was used as anchored to the time of market opening for competition. This was done in order to facilitate cross case comparison and reveal the impact of opening the market for competition.

The CTI is calculated as follows:

$CTI(C)_n = \ln(F_{Str}(C,Str_n) * F_{Acq}(C,Acq_n) * F_{CiM}(C,CiM_n) * F_{Inv}(C,Inv_n) * F_{Pro}(C,Pro_n) * F_{Own}(C,Own_n) * F_{Ope}(C,Ope_n))$, where

$CTI(C)_n$ = Company Turnaround Index for company C on year n

ln = Natural logarithm, where the base is *e*, an un-ending Decimal with a approximate value *e*=2.718281828… *e* is the unique number with the property that the area of the region bounded by the hyperbola $y=1/x$, the *x*-axis, and the vertical lines $x = 1$ and $x = e$ is 1.

$F_{Str}(C,Str_n)$ = Strategy success index for company C on year n, where the value = 1 + the ratio of the change in net sales on year n over net sales on reference year, (year of deregulation)

$F_{Acq}(C,Acq_n)$= Acquisition Index for company C on year n, where the value = 1+Ln(N), where N equals the total number of acquisitions since reference year, (year of deregulation, the year of deregulation excluded and the year prior to the year N included)

$F_{CiM}(C,CiM_n)$ = Management index for company C on year n, where the value = (1+ Ln(1+Ln($\sum Q_{n-1}$)), where $\sum Q_{n-1}$ equals the number of substantial management position nominations since reference year, (year of deregulation, the year of deregulation excluded and the year prior to the year n included)

$F_{Inv}(C,Inv_n)$ = Investment index for company C on year n, where the value= $1+Ln((\sum I_{n-1}))$, where I equals number of major investments annually since reference year, (year of deregulation, the year of deregulation excluded and the year prior to the year n included))

$F_{Pro}(C,Pro_n)$ = Profitability index for company C on year n, where the value = ROCE of year n over ROCE of the reference year, (year of deregulation)

$F_{Own}(C,Own_n)$ = Ownership structure index for company C on year n

$F_{Ope}(C,Ope_n)$ = Operation cost index fro company C on year n

APPENDIX C
VARIABLES USED IN ESA FOR CONSTELLATION, FORTUM CORPORATION, VATTENFALL AND CENTRICA

CONSTELLATION

NEPA - In 1992 the US Congress passed the National Energy Policy Act.

BGEREQ - requests by BGE to the Commission to permit it to set up a holding company that would allow it to enter competitive markets.

HB 703, SB 300 – Passing of House Bill 703 and Senate Bill 300

ING1993 - in 1993 the commission initiated an investigation on the allocation of costs within the company between the regulated and unregulated business activities.

MDBOU1993 - the regional boundaries for electric utilities service areas in the state of Maryland were established.

ING1993 and **ING1994** - the commission initiated an investigation on the promotional practices of BGE and the tariff structure.

ING1995 - the Commission initiated an inquiry on the framework for gas business deregulation.

MKTr1995 - BGE applied for a transition to market-based rates in its gas business.

GASORG - BGE organized the gas procurement to a subsidiary.

CTAR1995 the Commission set targets for the generation business.

CONST Constellation was founded in 1995.

ENRON Throughout the 1990s Enron was the driving force trying to persuade both the Federal Government and the various states in trying to open the energy markets for competition[62].

FERC888 - FERC order 888, issued on April 24, 1996 "Open Access Transmission Order" which set the standard for rules regarding access to the network by for the generators and

[62] Multiple discussions at Maryland PSC.

required transmission line owners to offer access to the grid at prices comparable to those they charge to themselves.

ING1996 - In 1996 (the Commission initiated an inquiry into the provision and regulation of electric service. In December 1996).

INGa1996 - the Commission initiated an inquiry of the company's practices under certain tariffs regarding customer enrolment practices. This was followed in 1997.

ING1997 - the Commission initiated an inquiry on the standards of conduct.

FIL1997 - In April 1997 the company finally filed the application to merge. This merger was then put into reality in 1999 through a share exchange.

SB 851 - Passing in April 1997 of Senate Bill 851

CO8738 - In 1997 Maryland PSC issued an Order 8738 establishing a framework for the restructuring of the electric power industry.

The **Commission had a role as an advisor to the governor, the state senate and house**. The Commission being politically nominated by the governor kept continuous contact with the governor and the state parliament, especially during the legislative sessions in the beginning of each calendar year.

CPERF1998 - In 1998 the Commission set performance targets for the BGE generation activity

BGESTRC - BGE application to recover stranded cost.

OPC1998 - In 1998 the Office of People's Counsel as an advocate of the consumer groups requested the reduction in retail rates.

SETL1998 - In the 1998 Settlement agreement, the Maryland utilities (including BGE) OPC and the Commission agreed on two phase market opening incorporating all the actions into one package.

HB 3 and SB 65 - In 1999 House Bill 3 and Senate Bill 65 allowed BGE to form a holding company.

HB 703 and SB 300 - In 1999 the House Bill 703 and Senate Bill 300 "Maryland Customer Choice and Competition Act," enacted restructuring legislation in Maryland.

RESTRPLAN - BGE submitted its new restructuring proposals in July 1999 to the PSC.

FERC2000 - In, 1999 FERC issued Order 2000 on regional transmission organizations (RTOs).

GENTRANS - In March 2000 the generation assets of BGE were transferred to Constellation on book value.

COMPSWITCH - Throughout the observation period the share of residential customers switching supplier was negligible. However, it has to be pointed out, that this was the case only among residential customers while the larger industrial customers typically did use the opportunity to switch supplier[63]. The primarily commercial and industrial customer switching is indicated as.

IPO - In the year 2000 the IPO of Constellation,

SEPAR - October 2000 the merchant energy business were separated from retail services business.

UWDON - Donations, specifically to United Way were constantly on the agenda.

FINPR - The financial problems of 2001 resulting from continued investments in different competitive power generation projects.

CEO - The 2001 nomination of Mayo A. Shattuck as the president and. CEO.

NEWSTRAT, **NEWORG** - The new CEO quickly changed the strategy and the organizational shape of the firm.

FINIMP - in 2002 the improvement of the financial situation of the company.

NOM - The 2002 wave of nominations.

SB 285 - In 2004 the Maryland Senate passed Senate Bill 285 that required electric firms in Maryland to conduct a study tracking shifts in generation and emissions as a result of restructuring the electric industry.

[63] Monthly customer switching statistics provided by Maryland PSC.

BGEFERC - In 2005, BGE and other transmission owners filed a joint application at FERC to have network transmission rates established through a formula that tracks costs instead of through fixed rates in accordance with FERC guidelines.

EPA2005 - Introduction of the Energy Policy Act of 2005.

Expected price increases - The major hurricanes Katrina and Rita in the fall of 2005 caused a rapid rise in natural gas prices, followed by a rapid rise in the power market prices. As the rate freeze was determined to expire in July 2006, there was general anticipation of a substantial price shock in the retail prices of electricity. The expected rate increases caused an intense political debate which resulted in an arrangement *de-facto* postponing the rate increases by a year.

ELECT06 -In 2006 the gubernatorial elections in Maryland.

FORTUM CORPORATION

IVOSTR - Imatran Voima (IVO) sought growth opportunities pursuing an internationalization strategy.

IVOI - The establishment of IVO International.

IVOGES - Establishment of IVO generation services.

Telivo - Establishment of a subsidiary for providing national long distance telecom services was established.

90/547/EEC - Introducing directive for the transit of electricity through transmission grids.

90/377/EEC - Community procedure to improve the transparency of gas and electricity prices charged to industrial end-users

EMA95 - The government's proposal on law opening power markets for competition, electricity market act was given in August 1994 to the parliament (HE 138/94) and later passed as law 386/1995

LEXCOM - The transmission network operators and all key players in the power market provided an opinion on the proposed EMA legislation.

REG - Law proposal on the establishment of an electricity regulator was then subsequently given to the parliament as government proposal HE 202/1994.

TECOMPL99 - Complaints about the distribution rates of Tuusulanjärven Energia (later Fortum Distribution) regarding the rates of the company.

EMA01 - The energy market Authority ruled in 2001 that for 1999 the rates would need to be corrected retroactively.

IVONSTR - As a reaction to the simultaneous introduction of competition in Finland and Sweden, in 1996 IVO had started implementing a new strategy.

ACQGS - buying shares of Gulspång.

ACQSEV - Gulspång acquired Skandinaviska Elverk (SEV).

ESTB - establishment of Birka, a joint venture with the City of Stockholm.

1stPackage - The Directive 96/92/EC of the European Parliament and of the Council of 19 December 1996 set out the framework for common rules for the internal market in electricity.

2ndPackage - This first package has the subsequently been complemented by the second package *(*2003/54/EC*)*.

FG - Merging the transmission networks of Imatran Voima and Teollisuuden Voimansiirto to form Fingrid.

FORTUM - Merger of Neste Oy and Imatran Voima Oy.

1stCEO - The CEO of IVO, Heikki Marttinen was nominated as the CEO of Fortum.

FINISTR - The initial strategy of Fortum.

PR1 - The media blaming the company's two-headed management structure for causing a lack of direction and profile in the company.

CEONOM - Mikael Lilius nomination as a CEO of Fortum.

FORSTR - The new strategy of Fortum.

ACQSE - Acquisition of Stora Enso's power assets in the Nordic region.

ACQWE - Acquisition of Wesertal in northern Germany.

ACQLV - Acquisition of Länsivoima Oyj .

ACQBIR - Purchase of outstanding shares of Birka Energi.

FOR01 - A response to the EMA ruling Fortum applied to supreme administrative.

DIV02 - Divestmenet of the shares of Fortum Energie GmbH in Germany () (Wesertal.

KHO02 - The supreme administrative court ruled in December that the EMA ruling of 2001, 2002 (3349, Dnro 1244/2/01) was correct.

DISMER - Fortum merged the distribution businesses.

OL3APR - The parliament approved the construction of the Olkiluoto 3 nuclear power plant..

OL3FOR - Fortum decided to participate in the new nuclear generation project in Olkiluoto.

DEMER - Oil businesses were separated from Fortum.

ACQEON - Fortum acquired E.On Finland.

VATTENFALL

NUCREF - Referendum on the fate of nuclear power in the country.

ALTEN - Development on alternative energy sources.

NGINT85 - Natural gas was introduced in Sweden.

BCLO99 - Barsebäck I was shut down in fall of 1999.

BCLO05 - Barsebäck's second reactor shut down was scheduled for.

VINC92 - Vattenfall was incorporated as a public limited company.

SKDEM - The national power transmission network, Svenska Kraftnät was unbundled.

POLENT92 - Vattenfall entering the Polish energy market.

INTSALE95 - Selling power to Enso-Gutzeit and mining group Outokumpu in 1995.

INTSTRAT - International growth strategy for Vattenfall.

DEREG96 - The electricity market was opened for competition.

EI96 - A regulator, Energimarknadsinspektionen was established.

NP93 - Nord Pool was founded

SWPN96 - 1996 Sweden joined the power exchange.

VFOY94 - Setting up a subsidiary in Finland Vattenfall Oy, in 1994.

FINACQ95 - Purchase of two regional electricity producers in Finland.

FINDER95 - Finnish market opening for competition the company also began selling electricity directly to customers in Finland.

VFN95 - Vattenfall entered Norway.

VFD95 - Vattenfall entered Denmark.

GER96 - Vattenfall took its first steps into the German market, setting up a joint venture, Vesa Energy.

HS96 - Acquisition of a distribution company in Finland, Hämeen Sähkö in 1996.

GERDEG98 - German electricity market was deregulated in 1998.

HEW99 - Vattenfall acquired 25.1 per cent in Hamburgische Elekrizitätz - Werke AG.

VFEUR00) - Vattenfall Europe was formed

POLACQ00 - In 2000 Vattenfall acquired a 55 per cent holding in Electrocieplownie Warszawiskie (EW).

VEAG01 - Acquisition of generation and transmission network company Veag Vereinigte Energiewerke AG and the fuel supplier Lausitzer Braunkohle.

BEWAG01 - Acquisition of Bewag.

GRWTH - The company effectively doubled its revenue base, not to mention the impact for assets.

CENTRICA

GA48 - The 1948 gas act.

NGDISC - Gas discovery in the North Sea.

GASCONV - Decision to convert Britain to natural gas.

GA72 - The 1972 gas act.

EGA82 - The 1982 oil and gas (enterprise) act.

TPA82 - Third party access.

PRIV86 - Privatization of the company.

OFGAS - The establishment of the regulator, Ofgas.

MKTSRED - A request to reduce its market.

NEWCOMP - New competitors entering the market.

MMC93 - Monopolies and Mergers Commission (MMC) inquiry.

DOMCOMP - Opening of domestic gas market to competition.

BGRSTR97 - BG restructuring.

DEMER- BG demerger.

POWSAL97 - Introduction of electricity sales.

CUSTSWITCH - Customers switching to BG.

HUMACQ01 - Acquisition of Humber Power Limited.

ENACQ01 - Acquisition of Enron's former energy customer business.

APPENDIX D
INTERVIEWS

Glenn Schleede

Paul Dragoumis

Jorma Väkiparta

John Murach and David Sikora, BGE

Alan Wyatt, Paul Hallas, Centrica

Tom Brady, Larry McDonald and Pentti Aro, Constellation

Branko Berzic, Deloitte

Paterson Brown, DoC

Jeff Skeer, DoE

John Clarkson Robert Paislee, Tarja Kunnas, Bob Byrd Embassy of the United States in Helsinki

Kenneth Hänninen, Energiateollisuus

John W Rowe, Exelon

David Mead, Udi Helman, Sebastian Tiger, FERC

Tapio Kuula, Fortum

Roger Gale, GF Energy

Juho Lipponen, Eurelectric

Lars-Olof Hollner, EU Representation in Washington DC, Kalervo Rötsä, Augustin van Hasteren, Philippe Chauve, William Webster, European Commission

Dr Michael Canes, LMI Research Institute

Bob Linden and Ed Kee, PA Consulting Group

John Derrick Jr, PEPCO

Phillip G Harris, PJM

Roy Granroth,Akke Kuusela, Porvoon Energia

Debra Reed, Sempra

Gunnar Lundberg, Vattenfall

Mikko Kara, Olli Ernvall, VTT

Multiple discussionas at EMV

Multiple discussionas at MDPSC

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